WISDOM

Owner's Manual

Sage Cinema Series Hybrid Line Source
Tri-Amplified Planar Magnetic
Loudspeaker

Contents

DOCUMENT CONVENTIONS

This document contains general safety, installation and operation instructions for the Wisdom Audio Sage Cinema Series Line 2 loudspeakers. It is important to read this document before attempting to use this product. Pay particular attention to:

WARNING: Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in injury or death.

CAUTION: Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in damage to or destruction of part of or the entire product.

Note: Calls attention to information that aids in the installation or operation of the product.

Introduction

Congratulations on purchasing your Wisdom Audio system. It incorporates many design features designed to give you decades of pleasure and performance. Many of these design choices are uncommon among loudspeaker manufacturers, and bear some explanation. See the following section entitled "Overview" for more information.

Our unique driver designs and our emphasis on achieving real-world performance account for the "system" approach taken. These are not speakers that are simply connected to speaker wires and promptly forgotten. We recognize that setting up a Wisdom Audio system is a bit more involved than connecting a common set of loudspeakers, which is why we insist that our dealers perform the installation and calibration of the systems. We know that the extra effort (particularly as regards setting up the SC-2 and SC-3 System Controller) yields vastly improved results.

This manual focuses on the loudspeakers themselves. In order to fully understand the system, we recommend you also review the manual for the SC-2/SC-3 System Controller, without which these speakers will not perform correctly.

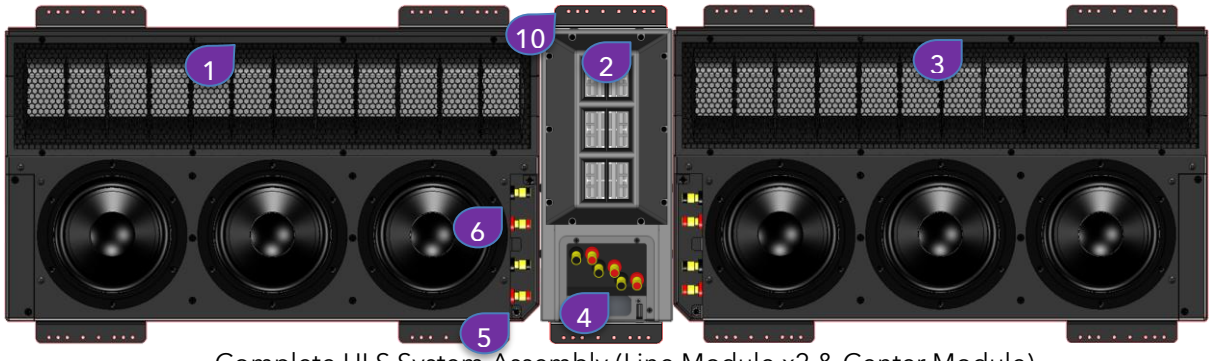
While we expect your local Wisdom Audio dealer to take care of the setup and calibration of the system, we still recommend that you at least briefly review this and the other manuals (SC-2/SC-3, RTL subwoofers) to understand the system's full capabilities.

Your Sage Cinema Series Hybrid Line Source ("HLS") loudspeaker are specifically designed to avoid the compromises inherent in conventional speaker designs. The active crossover and room correction circuitry in the SC-2 & SC-3 is essential to the speakers' proper operation. It is truly a "system" design, and not merely a collection of loudspeaker drivers in a box.

System Connections and Components

1. Line Module 1 (Mid-Low Frequency)
2. Center Module (High Frequency)
3. Line Module 2 (Mid-Low Frequency)
4. Input Binding Posts Terminal (from amplifier, Low-Mid-High)
5. Line Module Binding Posts Low Pass Input (from Center Module Low Pass fly leads) x2
6. Line Module Binding Posts High Pass Input (from Center Module High Pass fly leads) x2
7. Center Module to Line Module fly leads (high pass x2)
8. Center Module to Line Module fly leads (low pass x2)
9. Mounting Bracket Screw Holes Top and Bottom (bracket not shown for clarity) x4
10. L Bracket (On-wall or In-Wall)
11. Center Module Terminal Cover Screw Mounting x4
12. Rear Panel Wiring Pass-through from Amplifier

NOTE: Binding posts terminal covers removed for clarity



Complete HLS System Assembly (Line Module x2 & Center Module)

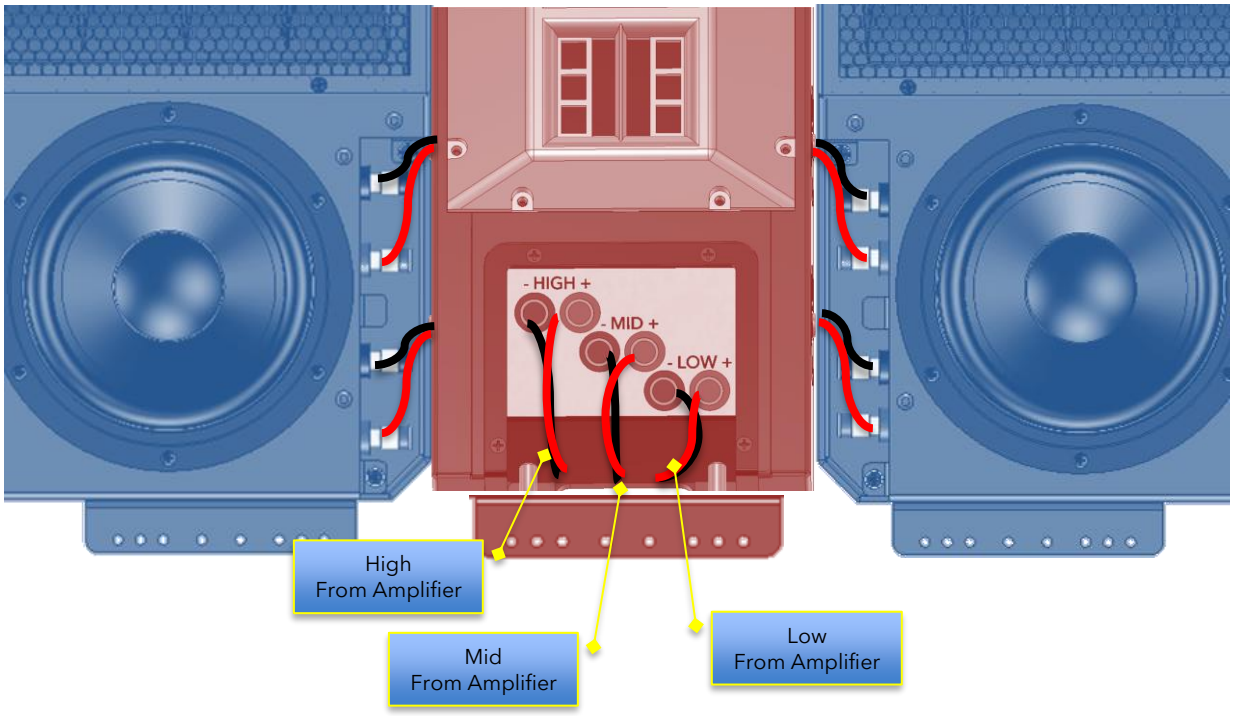
HLS Center Module Front and Rear Detail View (Terminal Cover Removed)

System Wiring

NOTE: Binding posts terminal covers removed for clarity
Three pairs of speaker wires from the amplifier are needed. One for Low, one for Mid, and one for High.

First connect to the Center Module from the amplifier.

Then connect from the Center Module to the Line Modules on either side using the included jumper wires (fly leads).



Complete HLS System Assembly (Line Module x2 & Center Module)

Overview

Your Sage Cinema Series Hybrid Line Source loudspeaker takes advantage of several critical technologies to deliver a level of performance that has never been available in a loudspeaker that intruded so modestly on your living space. In fact, this level of performance has rarely been attained, regardless of the space and budget.

Since several of these technologies cannot readily be found elsewhere, we will take the time to describe them in more detail than would be necessary for more conventional designs.

Our planar magnetic drivers ("PMD") use an advanced, thin film membrane to move the air. This film can respond instantly to the smallest detail in the signal. It has vastly less inertia than traditional "cone & dome" drivers, so the signal is never blurred in any way.

One of the most remarkable things about the sound of well-designed planar magnetic speakers is their lack of thermal or dynamic compression. There are several reasons for this:

- The lightweight diaphragm responds quickly to even the smallest signals, yet is robust enough to handle a great deal of power.
- The voice coil is laid out at and is exposed to the air on both sides; the large resulting surface area dissipates heat extremely quickly and efficiently.
- Since heat does not build up in the voice coil (as it does in conventional dynamic drivers), the load seen by the amplifier does not change at high power levels.

When you become accustomed to the sound of your new Sage Cinema Series Hybrid Line Source speakers, conventional speakers sound a bit bland and lifeless. You may also discover yourself hearing details at even modest levels on the Hybrid Line Source that were previously inaudible even at loud volumes on more conventional speakers.

The "voice coil" in the planar magnetic driver is spread out over a large, at area that is exposed to the open air. As such, when a huge transient comes along, any heat that is generated is immediately dissipated. This compares quite favorably to other designs in which the voice coil is buried inside a massive piece of metal, where the heat has effectively no place to go.

The excellent heat dissipation of these drivers makes them remarkably reliable. Planar magnetic speakers can handle a great deal of power without undue stress or audible strain. In fact, for a given size, they can handle *many times* the power of a traditional dynamic driver.

Because the conductor of a planar magnetic driver is essentially a long, thin wire, it presents a purely resistive load to the amplifier. This is comparable to the simple test loads that amplifier companies use when measuring their amplifiers to show how terrific they are. As such, you can be assured that your amplifiers will sound and work their best.

Authoritative, deep bass requires that you move a lot of air. We have chosen to use dynamic woofers for the bass because they can provide excellent performance at lower frequencies.

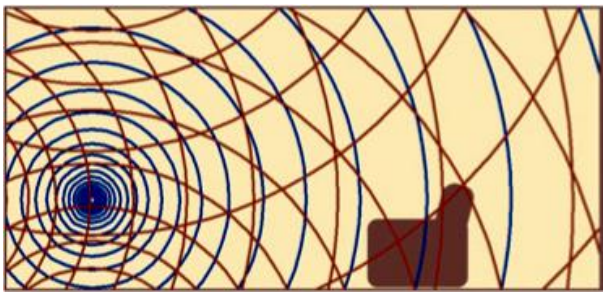
In order to get comparable bass performance from a planar magnetic design, you would need to have a huge speaker that would be impractical in most domestic living spaces. It simply makes more sense to use the best transducer technology in each area of the reproduced spectrum. One of Wisdom Audio's strengths is in seamlessly blending these technologies – particularly important given the high standards set by our planar magnetic drivers.

Of course, the dynamic woofers themselves must be rather extraordinary in order to "keep up" with the planar magnetic drivers right up to the crossover frequency.

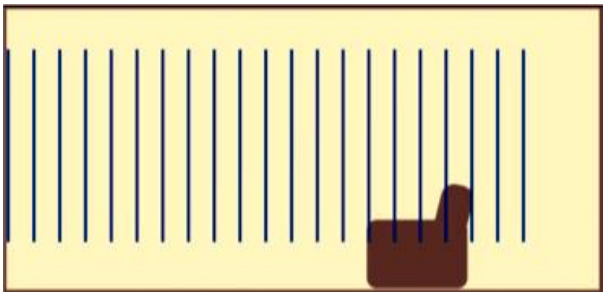
All Sage Cinema Series speakers have been designed for optimal at response to 80 Hz, which is the most-common crossover frequency used with subwoofers.

Designed to Match the Line Source Speakers – A Completely New Configuration

Almost all loudspeakers radiate sound into the room as imperfect "point sources". This means that most of the energy they put into the room expands as an ever-enlarging sphere, as though emerging from a single point in space. This results in a multitude of reflections from the ceiling and floor that can degrade sound quality.



By contrast, the Sage Cinema Series Line2, Line3 and Line4 speakers radiate sound as a "line source". The sound moves into the room as an expanding cylinder, rather than as an expanding sphere – as though from a vertical line suspended in space.



Line source speakers provide two significant advantages:

- Ceiling and floor reflections are minimized, resulting in greatly reduced interference, letting you hear more of the speaker and less of the room;
- The sound pressure level (SPL) throughout the room is much more evenly distributed, making it much easier to set the "right" volume, no matter where the audience is seated.

To achieve this highly desirable line source behavior it is essential to have a tall and slim driver.

However, this tall and slim driver requires a vertical arrangement and cannot simply be rotated for a horizontal configuration. This makes applications where a center channel is needed either above or below a direct display (such as a large direct view LED display) impractical. When positioned horizontally, the image width becomes increasingly narrow and has poor coverage to the sides, giving a very narrow area of seating inside the sweet spot. This is not good for a center channel.

For this we needed to design a completely new configuration. One that maintains the voicing of the Sage Cinema Line Source speaker to ensure a seamless blend from the Left and Right, and that would have enough SPL and power handling to achieve similarly high output as the Line 2, Line 3 or Line 4.

The lowest frequencies from 80hz up to 300hz are handled by the 8" mid-bass drivers and the midrange frequencies from 300hz to 600hz are handled by the 24" PMD. These are the same drivers found in the Line2, Line3 and Line4 loudspeakers. At these frequencies, the large length of the dual 24" Line Source PMD panels and multiple 8" mid-bass drivers help to minimize room interaction/influence, just as in the Sage Line modules of the Line2, Line3 and Line4 loudspeakers. This design also maintains a similar voicing through these critical frequency ranges.

The frequencies above 600hz transition into a newly designed planar magnetic driver ("PMD") array that uses 3 of our 6-bar magnet motor structures arranged as a single module with an integrated passive network to handle frequency dividing. The high frequency module is used to create a wider horizontal coverage than a rotated Line

Source at these higher frequencies and is designed to be able to produce enough SPL to match the output capabilities of the Sage Cinema series.

This high frequency module uses 2 basic concepts to achieve high SPL for short term peaks, long term power handling for extended use, extended high frequency response past 20kHz, and excellent on and off axis response that easily blends with the Sage Cinema line source loudspeakers.

The first concept is power shaping: By configuring the 3x6-Bar PMD in an "MTM" (mid-tweeter-mid) arrangement and using a passive contour network between them a novel approach to increasing high frequency section power handling and maximum SPL, without sacrificing dispersion, was developed. This approach encompasses both power shaping and frequency response tapering to maintain the 6-Bar PMD off-axis response whilst increasing the power handling by at least a factor of 2.

The second concept is heat wicking: Iterative heat-sink configurations were developed for the 6-Bar motor, until an iteration was developed that passed the CEA 426B test with no measured effect on performance. The final heat sinks were standard horizontal fins attached to the rear motor structure with a large heat spreader to increase thermal mass, and a black aluminum grate installed in close proximity to the front of the diaphragm and in contact with the front magnet, with ridges bent into the mesh to aid in heat dissipation (the technique is called "heat wicking"). The entire thermal assembly is assembled with the PMD as a sandwich including a large front plate of aluminum that acts as both a structural member, to hold the motor structure and magnets in place, and also a heat sink to allow the heat generated by the magnets to be dissipated out from the enclosure and into the room.

The above design choices give the Hybrid Line Source loudspeaker three primary features for easy integration within a Sage Cinema install with a hard screen.

- The 24" planar panels combined with the high frequency planar MTM give the same detailed, low-distortion clarity of sound as the Sage Line and Point Source modules.
- The large length of the dual 24" Line Source PMD panels help to minimize room interaction/influence just as in the Sage Line source loudspeakers down to the lower midrange frequencies.
- The high frequency MTM is used to create a wider horizontal coverage than a rotated Line Source at higher frequencies and is designed to create enough SPL with high power handling to match the power of the Sage Cinema series.

Unpacking & Installing the Hybrid Line Source

Each module of the Wisdom Audio Sage Cinema Hybrid Line Source speaker is a substantial piece of equipment. Please exercise caution when unpacking your Sage Cinema speakers to ensure that you do not strain yourself from its (perhaps unexpected) weight.

CAUTION: Do not attempt to lift your Hybrid Line Source modules while bending or twisting from the waist. Use your legs for lifting, not your back. Always stand as straight as possible and keep the Hybrid Line Source close to your body to reduce strain on your back.

After unpacking your Hybrid Line Source modules, keep all packing materials for future transport. In the event that you need to ship your speaker, only the original, purpose-designed shipping carton is acceptable. Any other method of shipping this product runs a significant risk of damage to the speaker —damage that would not be covered by the warranty. (If you lose your packaging and need to ship your speakers, replacement packaging can be purchased from Wisdom Audio.)

Mounting and Connecting the Hybrid Line Source

The Sage Cinema Hybrid Line Source is designed as a center channel to be installed either directly above or directly below a direct view display. It may be mounted either as an in-wall or as an on- wall speaker.

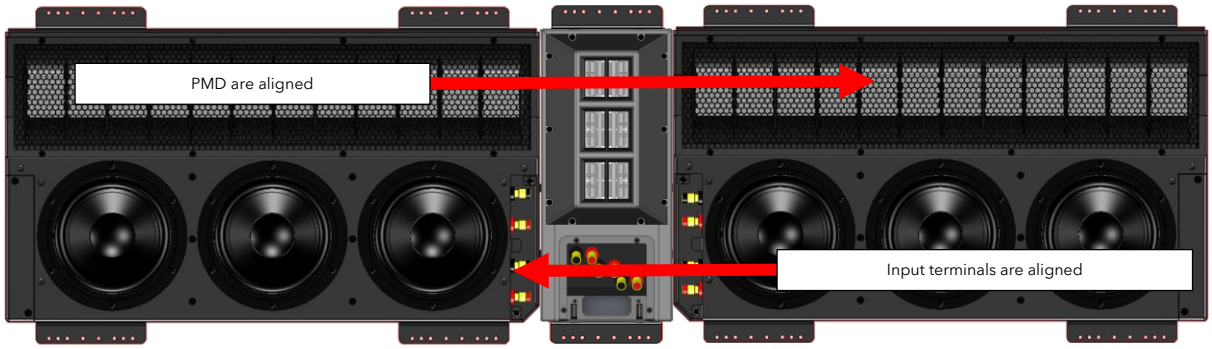
The flexible mounting brackets provided with the Hybrid Line Source allow many possible mounting options, depending on what you choose to use as your reference surface. The beveled back edges of the speakers also may be used as a wire chase in situations where space is tight.

The center module includes a pass through for the speaker wires from the amplifier, and internal distribution for the line modules on either side. The system is installed as three modules, side by side starting from the center.

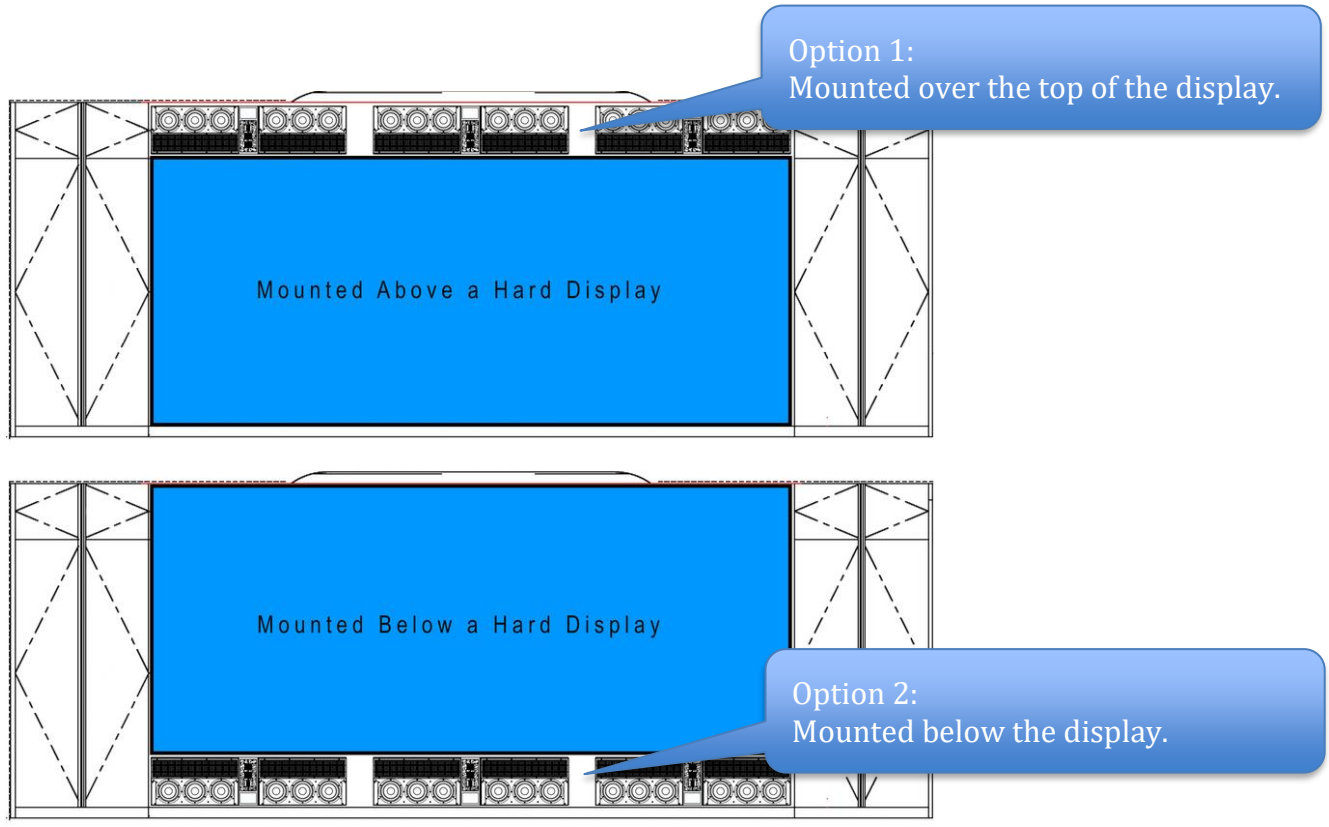
1. Determine the center line of the display and mark this location.
2. Mount the Center Module using this center mark. The module should be on-center to the center line of the display.
3. Mount the Line Modules to either side of the Center Module, with the top and bottom aligned and the sides tight to center module.
4. Pull the speaker wires from the amplifier and connect to the Center Module input terminals
5. Connect the fly-leads from the Center Module to each Line Module. The outputs on the side of the Center Module are aligned with the inputs to the Line Modules.

Proper Planar Placement

The HLS can be installed above or below the display. Depending on the height of the display, location of the seating, and ceiling height, the HLS may be mounted either with the planar drivers (PMD) on the top or the bottom. Contact Wisdom Audio when designing the installation for consultation on the best option for your particular design. Regardless of placement or orientation, the Line Module Planar Drivers and the Center Module Array must be mounted with the PMD aligned and the input terminals aligned. See below closeup.



NOTE: We recommend allowing for 36" (915mm) of hard surface in the ceiling or the floor in front of the Hybrid Line Source.



The Importance of a Baffle Wall

Whether used as an in-wall or as an on-wall speaker, the Hybrid Line Source is optimized for use on a solidly constructed surface. It should not be mounted in open framing, as this results in improper low frequency loading and many early reflection and diffraction effects that adversely affect performance.

When used in an in-wall configuration, the framing must be 2"x 6" or deeper, as the Hybrid Line Source is designed to take full advantage of the 5.5" depth found in such framing. Ideally, each loudspeaker is "framed in" much as a window would be framed in. This approach provides the most solid support of the loudspeaker, and surrounding the face of the speaker with either the drywall or plywood wall surface provides both bass reinforcement and the fewest reflection and diffraction problems.

Wall Construction Suggestions

Having a solidly-built wall is essential for getting the best performance out of any wall-mounted speaker. After all, the wall may not move as much as the speaker diaphragms, but it has *vastly* more surface area. If it resonates even a bit, it can and will color the sound greatly.

Hence, some suggestions:

1. **Using the supplied "ears", screw the speakers to the surrounding framing rather than to the wall surface (sheet rock, plywood, whatever).** The simplest way to do this is to frame in around the speaker locations so there is only an inch or two of space between the speakers and the surrounding studs. If you are building the walls anyway, the incremental cost of a few extra studs is small. But it will pay off in quieter walls.

2. **Use specially designed drywall, such as Quiet Rock.** Quiet Rock is a specialized form of sheet rock which has some constrained-layer damping built into each sheet. More information at *http://www.quietrock.com*

3. **Consider using double-wall construction with a flexible adhesive layer.** The best-known of these products is Green Glue; more information is at *http://www.greengluecompany.com*. Plan on using it between the two layers of a double-layered wall.

4. **Always create a smooth Baffle Wall from which the sound of the speaker can emanate with as little interference as possible.** You can and probably *should* plan on applying acoustic treatments to some of the room surfaces. But make sure that the area around each of the speakers is absorptive rather than

diffusive or reflective. And do not simply leave the studs bare and wide open, figuring that the stretched fabric will make it all better. Cut a hole in the wall's surface just large enough for the face of the speaker itself, and adjust the mounting brackets so that the face of the speaker is flush with the wall face.

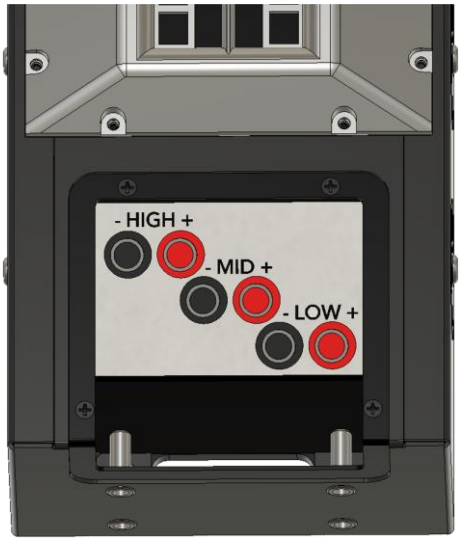
5. **If you are doing a front projection system, choose an acoustically transparent screen material, and cover everything except the speakers themselves with absorption on that front wall**. Other parts of the room's décor may or may not lend themselves to being covered with fabric. But the front wall will be largely covered, so take advantage of the ease with which you can reduce early reflections from the front wall, and back-and-forth slap echoes along the length of the room.

Making the Hybrid Line Source Connections

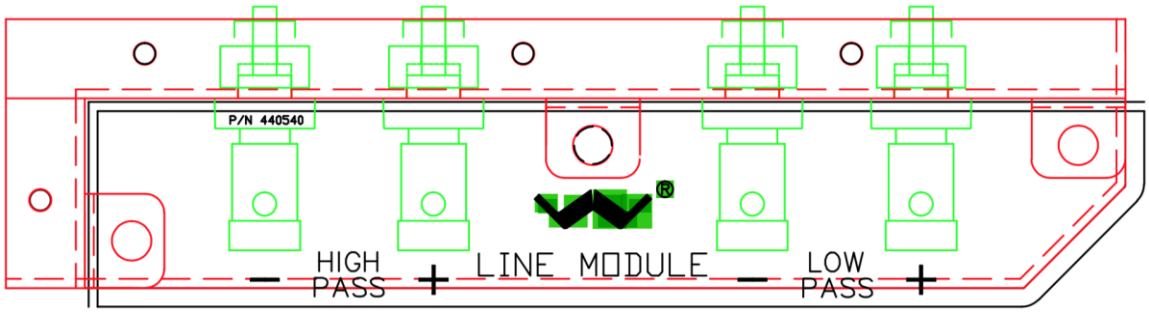
As with any system, you should make changes to the connections only when the power is turned off to avoid any chance of inadvertently causing a problem (such as a short-circuit).

1. Remove the cover panel on the front of the HLS Center Module
2. Route the speaker wires from the amplifier through the access panel in the rear of the HLS Center Module.
3. Connect from the tri-amplified outputs of your amplifier (3 channels) to the input of the HLS Center Module.
4. Connect from the HLS Center Module fly leads to the Line Module on either side of the Center Module

NOTE: Be sure to connect the correct Low/Mid/High frequencies to the input terminals. Damage to the speaker could result if the wrong connections are made.



Detail View of Center Module Input Terminals (From Amplifier)



Detail View of Line Module Input Terminals (From Center Module)

Active (Tri-Amped) Design

The Sage Cinema Hybrid Line Source is designed to be tri-amplified. There are no passive crossover components inside the speaker; instead, there are direct connections from the amplifiers to their respective drivers.

When using an external active crossover like the Wisdom Audio SC-2/3, three sets of speaker wires are required for each Sage Cinema Hybrid Line Source loudspeaker: one pair for the woofer (low) section, a separate pair for the planar magnetic (mid) section that handles the midrange, and a third pair for the high frequency module (high).

We recommend using heavy-gauge speaker wire, the gauge will vary dependent on your speaker run length. Please consult an authorized dealer to determine what gauge would be best for your application.

For the purposes of this manual, we will assume that you have already connected the SC-2/3 System Controller as per the instructions found in its manual. As such, you should have signal coming from your source component(s) to a preamp/processor, and then on to the SC-2/3; following the SC-2/3, the signal is split into low, mid, and high sections, with the low section going to one Wisdom Audio SA Series amplifier channel which will drive the woofer drivers, the mid section going to a second SA series amplifier channel which will drive the planar magnetic panels, and the high section going to a third SA Series amplifier channel, which will drive the high frequency module.

- Connect the outputs of your Wisdom Audio SA Series amplifier to the center module input terminal binding posts, taking care to get both the channel assignments and the polarity correct. Connect the positive (+) terminal on the woofer amplifier to the positive (+) terminal for the Low Pass on the loudspeaker; like- wise, connect the negative (–) terminal on the woofer amplifier to the Low Pass terminal on the loudspeaker, respectively.
- Repeat this process for the Mid and High Pass section on the center module.
- The center module has fly leads to connect to either side of the center for each line module that flank the center.

Your Hybrid Line Source and Subwoofers

All Sage Cinema Series loudspeakers are optimized for use with subwoofers, with a crossover of 80 Hz. (This is the most common frequency below which subwoofers are used.)

When properly installed in the wall, your Hybrid Line Source has inherently a response to 80 Hz, without the common "bass bump" that characterizes most in-wall speakers and is placed there to yield the impression of "more bass" than there really is. This makes it easy to blend seamlessly with a high quality subwoofer such as one of Wisdom Audio's Regenerative Transmission Line™ (RTL™) subwoofers.

You should set up your surround processor for a crossover of 80 Hz and set the Hybrid Line Source speakers as "Small" in the speaker setup portion of your processor's setup menu. Doing so ensures that all content below 80 Hz is directed to the subwoofer(s) for reproduction.

Care & Maintenance

To remove dust from the front of your Hybrid Line Source, use a feather duster or a lint-free soft cloth.

To remove stubborn dirt and fingerprints from the grille, we recommend isopropyl alcohol and a soft cloth. Lightly dampen the cloth with alcohol first and then clean the grille of the Hybrid Line Source with the cloth. Do not use excessive amounts of alcohol—there is no need for the cloth to be wet; merely damp is better.

Never attempt to clean the drivers themselves.

Caution!

Do not touch the surface of the planar magnetic drivers, under any circumstances. The thin film has been carefully pre-tensioned at the factory; any subsequent contact can only damage it.

North American Warranty

Standard Warranty

When purchased from and installed by an authorized Wisdom Audio dealer, Wisdom Audio loudspeakers are warranted to be free from defects in material and workmanship under normal use for a period of ten years from the original date of purchase.

Furthermore, the transducers ("drivers") in your Wisdom Audio speakers are warranted to be free from defects in material and workmanship under normal use for a period of ten years from the original date of purchase.

Harsh Conditions Use

Wisdom Audio loudspeakers are designed for installation and operation in environmentally controlled conditions, such as are found in normal residential environments. When used in harsh conditions such as outdoors or in marine applications, the warranty is three years from the original date of purchase.

During the warranty period, any Wisdom Audio products exhibiting defects in materials and/or workmanship will be repaired or replaced, at our option, without charge for either parts or labor, at our factory. The warranty will not apply to any Wisdom Audio products that has been misused, abused, altered, or installed and calibrated by anyone other than an authorized Wisdom Audio dealer.

Any Wisdom Audio product not performing satisfactorily may be returned to the factory for evaluation. Return authorization must first be obtained by either calling or writing the factory prior to shipping the component. The factory will pay for return shipping charges only in the event that the component is found to be defective as mentioned above. There are other stipulations that may apply to shipping charges.

There is no other express warranty on Wisdom Audio products. Neither this warranty nor any other warranty, express or implied, including any implied warranties of merchantability or fitness, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts and other states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion 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. This warranty is applicable in the United States and Canada only. Outside of the U.S. and Canada, please contact your local, authorized Wisdom Audio distributor for warranty and service information.

Obtaining Service

We take great pride in our dealers. Experience, dedication, and integrity make these professionals ideally suited to assist with our customers' service needs.

If your Wisdom Audio loudspeaker must be serviced, please contact your dealer. Your dealer will then decide whether the problem can be remedied locally, or whether to contact Wisdom Audio for further service information or parts, or to obtain a Return Authorization. The Wisdom Audio Service Department works closely with your dealer to solve your service needs expediently.

IMPORTANT: Return authorization must be obtained from Wisdom Audio's Service Department BEFORE a unit is shipped for service.

It is extremely important that information about a problem be explicit and complete. A specific, comprehensive description of the problem helps your dealer and the Wisdom Audio Service Department locate and repair the difficulty as quickly as possible.

A copy of the original bill of sale will serve to verify warranty status. Please include it with the unit when it is brought in for warranty service.

WARNING: All returned units must be packaged in their original packaging, and the proper return authorization numbers must be marked on the outer carton for identification. Shipping the unit in improper packaging may void the warranty, as Wisdom Audio cannot be responsible for the resulting shipping damage.

Your dealer can order a new set of shipping materials for you if you need to ship your loudspeaker and no longer have the original materials. There will be a charge for this service. We strongly recommend saving all packing materials in case you need to ship your unit some day.

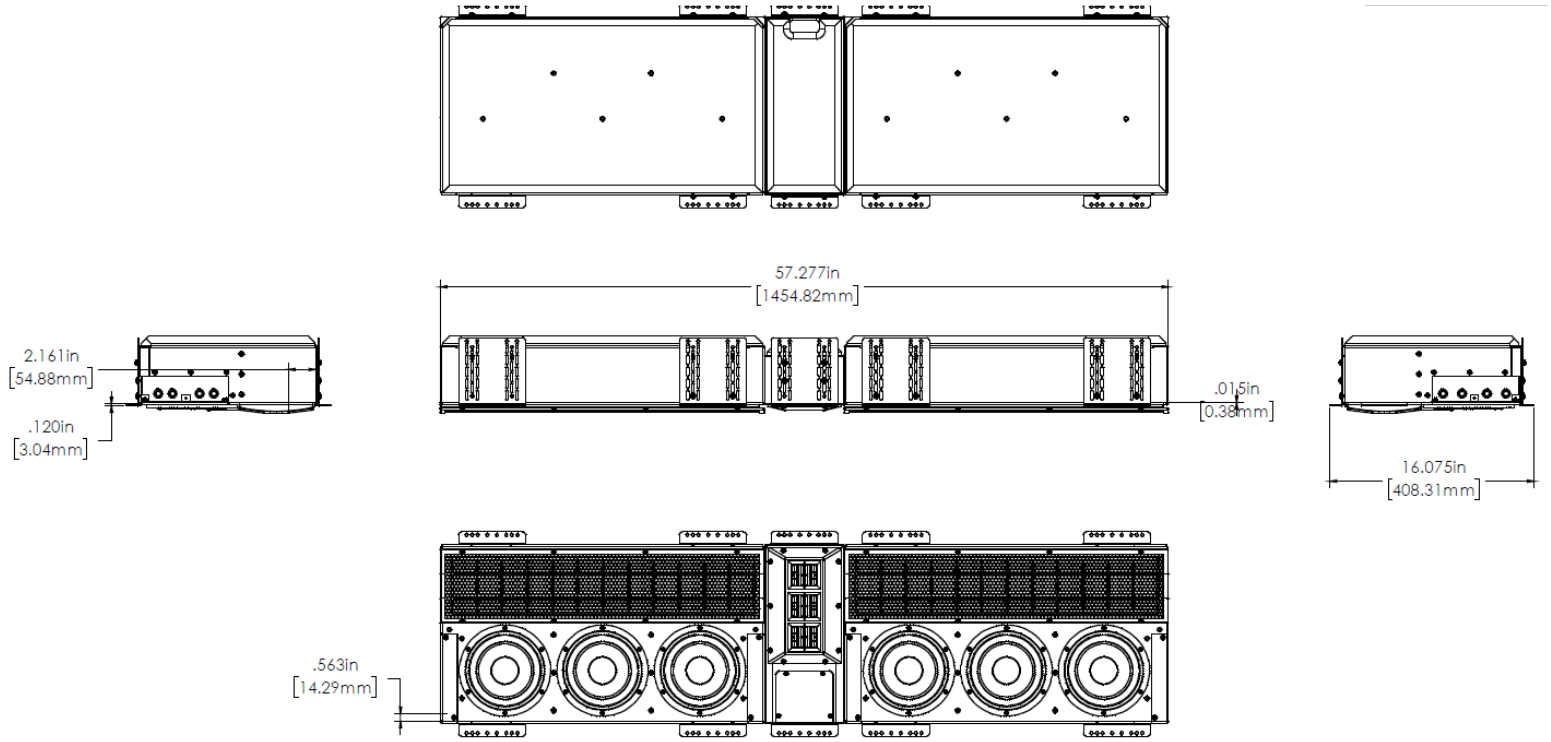
If the packaging to protect the unit is, in our opinion or that of our dealer, inadequate to protect the unit, we reserve the right to repackage it for return shipment at the owner's expense. Neither Wisdom Audio nor your dealer can be responsible for shipping damage due to improper (that is, non-original) packaging.

Specifications

All specifications are subject to change at any time.

- **Number of required amplifier channels:** 3
- **Frequency response**: 60Hz – 20 kHz ± 2dB relative to the target curve
- **Impedance, high frequency planar section**: 8Ω
- **Impedance, mid-planar section**: 5Ω
- **Impedance, woofer section**: 8Ω
- **Sensitivity:** 92 dB/2.83V/1m
- **Power handling, peak:** 500 Watts/channel
- **Dimensions:** see appropriate dimensions drawings below
- **Shipping weight:** 13 lbs Center Module (6 kg), 2x 42 lbs Line Module (19 kg)
- **Net weight, each Module:** 9.25 lbs Center Module (4.2kg), 2x 37 lbs Line Module (8 kg) , Total System 83.25 lbs. (37.7 kg)

Hybrid Line Source Dimensions



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