



Owner's Manual

**Insight Series L8i
Planar Magnetic Hybrid
Loudspeaker**

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Introduction

Congratulations on purchasing your Wisdom Audio loudspeakers. They incorporate 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 “Description” for more information.

About this manual

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 your other manuals in order to better understand your system’s full capabilities.

Registering your warranty

You do not have to do anything to register your warranty for your Wisdom Audio products. (Isn’t that a pleasant surprise?)

In the unlikely event that your loudspeakers ever require service, please contact the dealer from whom you purchased them. Between their records and ours, you should be all set.

However, please keep your sales receipt in a safe and easily found place. Should you move or lose touch with your original dealer, it will serve as your proof of purchase for warranty purposes.

Description

Your Insight Series L8i loudspeakers take 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 at one's disposal.

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.

Planar magnetic drivers

Our planar magnetic drivers 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.

The motive force is provided by a "voice coil" that is printed on the film, which is suspended in a strong magnetic field provided by powerful magnets behind and in front of the film. The ratio of available force to the moving mass is huge, which means that the diaphragm does exactly what it is



told: nothing more, nothing less.

Free from compression

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 flat 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 Insight Series L8i speakers, conventional speakers sound a bit bland and lifeless. You may also discover yourself hearing details at even modest levels on the L8i that were previously inaudible even at loud volumes on more conventional speakers.

More reliable

The "voice coil" in the planar magnetic driver is spread out over a large, flat 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 favor-



ably 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.

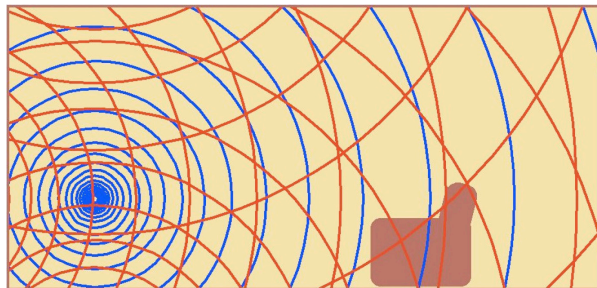
The excellent heat dissipation of these drivers makes them remarkably reliable. Planar magnetic speakers can handle a great deal of power without undue stress or audible strain. In fact, for a given size, they can handle *many times* the power of a traditional dynamic driver.

Easy on amplifiers

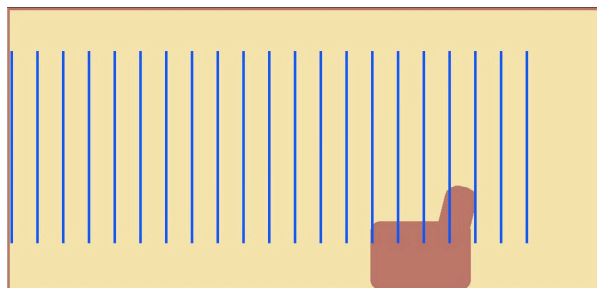
Because the conductor of a planar magnetic driver is essentially a long, thin wire, it presents a purely resistive load to the amplifier. This is comparable to the simple test loads that amplifier companies use when measuring their amplifiers to show how terrific they are. As such, you can be assured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

Line source behavior

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 Insight Series L8i 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 drawn on your wall.



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 listener is seated.

To achieve this highly desirable line source behavior, it is essential to have a tall and slim driver. (Simply stacking multiple “cone & dome” high frequency drivers does not create a proper line source. Instead, it creates a *series* of point sources which end up interfering with each other.) With Wisdom Audio’s planar magnetic technology, it becomes possible to have drivers that are *extremely* tall and slim. In the Insight Series L8i, for example, the active area of the midrange/treble driver is approximately 1” wide by 48” tall.

Because of this shape, the sound (even at high frequencies) is distributed uniformly across the width of the room from a driver that “looks” only about an inch wide acoustically. However, the sound is launched in a much more directional way vertically. By minimizing early reflections from the ceiling and the floor, the clarity of the system is greatly enhanced. This is heard in both tremendous musical detail and in much-improved dialog intelligibility.

For more detailed information on the loudspeaker drivers in general, and planar magnetic drivers in particular, please refer to the *Planar Magnetic Technology* white paper that can be found on the Wisdom Audio web site, at www.wisdomaudio.com.

Dynamic woofers

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.

Extraordinary 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.

Our woofers are different because they must be in order to do their job. Specifically, we need highly dynamic, uncompressed bass (to keep up with the planar magnetic drivers) that does not depend on a critical amount of enclosure volume (since these speakers are mounted in your wall, and use the space inside the wall as their “enclosure”). These two design goals require rather extraordinary attention to myriad details.

The motor and suspension system of these woofers therefore includes all the critical damping required for optimal operation. (In most speakers, the woofers depend on the air trapped inside their enclosures as an additional “spring” to help them behave properly.) Technically, this approach is known as an “infinite baffle” design. In practice, the volume of air behind the speaker does not have to be infinite, of course. It just needs to be large enough to not act like an acoustic “spring.” Recommended and minimum enclosure volumes for the speaker are listed in the Specifications section, and repeated on the Dimensions page.

Optimized for subwoofers

Many speakers include a mid-bass “bump” in their response to give the illusion of going deeper in the bass than they actually do. Unfortunately, this “bump” make blending them seamlessly with a high quality subwoofer almost impossible.

All Insight Series speakers have been designed for optimally flat response to 80 Hz, which is the most-common crossover frequency used with subwoofers.

Friendly to Room Correction

It is impossible to separate the performance of a speaker from the room it is in. No matter how well designed, a speaker will sound quite different in a carpeted library with lots of bookcases, heavy drapes, and overstuffed furniture than it would in a stone-and-glass great room.

Fortunately, even mid-priced receivers today have basic room correction capabilities. Some of these auto-equalization systems work better than others, but they all measure the response of the speaker in the room, and give you the option of trying to make the sound “flat.” Which is to say, all frequencies are reproduced at an equal volume when equal energy is put into the speaker.

Unfortunately, there are important differences between how our ears hear “flat” and how the microphone measures “flat.” Specifically, our hearing is quite adept at separating the direct sound from early reflections, and from subsequent reverberation in the room. The measurement systems commonly used in room correction do not make this sort of distinction. If you do not make an allowance for this difference, you often end up with *worse* sound, not better.

Your Insight loudspeaker addresses this important difference. See “Room Correction” for more detailed information.

Unpacking & Installing the L8i

Your new Wisdom Audio Insight Series L8i in-wall speaker is a substantial piece of equipment, which is shipped fully assembled. Please exercise caution when unpacking your L8i to ensure that you do not strain yourself from its (perhaps unexpected) weight.



Caution!

Do not attempt to lift your L8i while bending or twisting from the waist. Use your legs for lifting, not your back.
Always stand as straight as possible and keep the L8i close to your body to reduce strain on your back.

Simple installation instructions

1. Use the included cardboard template to trace the outline of the hole for the speaker and carefully cut to the line.
2. Carefully removed the magnetic grille, tipping it off from one side to the other (*not* from one end to the other), so as to avoid damaging the grille. Set it aside, laying it flat.
3. Unscrew and remove the speaker module itself (baffle plate, drivers, crossover) from the UniGrip™ mounting system and carefully set it aside.
4. Remove one long clamping rail from the Uni-Grip™ mounting system, and loosen the other side. Angle the Uni-Grip into the cutout so the remaining clamping rail is sandwiching the wall, and snug it down lightly. Insert the removed clamping rail through the wall opening, and reattach it to the Uni-Grip. Check everything for plumb, and snug both rails down.
5. Push any insulation in the wall to the side. If there is no insulation in the wall, loosely fill the stud bay with insulation to reduce cavity resonances and improve performance.
6. Using assistance to hold the speaker away from the wall, connect the speaker cable to the + and – connectors on the rear of the speaker, paying attention to proper polarity.
7. Screw the speaker module into the Uni-Grip frame.
8. Place the grille on the front of the speaker, registering it around the edges of the baffle. It is held magnetically and will gently snap into place.

Maximum wall thickness

The Uni-Grip system on the L8i can handle wall thicknesses of up to 1.25" (1¼" or 3.175cm). If you are planning a double-wall construction, you may use two 5/8" layers. You may also consider using MDO (medium density overlay) plywood, which is quite strong and has a smooth paper surface like gypsum board.

Room Correction

At Wisdom Audio, we recognize that you cannot separate the performance of a speaker from the room in which it operates. As such, we are big believers in both room treatment (to whatever degree it is practical) and room correction (equalization) to mitigate the sonic damage that even good rooms can cause. In fact, we include an extremely sophisticated room correction system in all our Sage Series and Wisdom Series systems.

Fortunately, effective room correction is widely available today in even mid-level AV receivers. Unfortunately, the target curves employed and functionality of these systems vary widely.

A solution to this problem is built into your Insight Series L8i in the form of the Response switch on the front of the speaker (near the bottom).

No room correction

If your system does not include any form of room correction (or you choose not to use it), we suggest listening to the system for some time with all the switches in the Target position. Once you are accustomed to the sound of the system, switch them all to Flat. In most (but not all) rooms, Flat will actually sound a bit too bright.

Decide which position you prefer (which is room-dependant) and settle in to enjoy the system.

Systems with room correction

Most room correction systems have the option of compensating for room acoustics in such a way as to create a nominally “Flat” response. While one would think that this would be the most desirable, in most rooms it sounds subjectively bright and fatiguing. The reason is simple: we hear sound differently than the microphone measures it, and we must make an allowance for that difference in order to achieve the best results.

Specifically, our ear/brain system is extremely good at sorting out the direct sound from early reflections, and from subsequent reverberation. Most measurement systems lump all of these things together, creating something of an average of all three.

If you do not allow for this disparity, the direct sound (which *should* be flat) ends up being tilted up at high frequencies in an effort to restore energy that has been absorbed by the room. The result may *measure* flat, but we perceive it as too bright (because the *direct* sound is, in fact, too bright.)

Thus, the most reliable way to calibrate the system is as follows:

1. Set all speakers to the Flat position.
2. Use your room correction system to calibrate to a Flat response in the room.
3. When the correction is complete and saved, listen to the system with all speakers in the Target position (which makes an appropriate allowance for the absorption found in typical residential rooms). As before, you can compare Flat to Target. But in most

rooms, the Target position will sound less fatiguing, without giving up any detail.

Your L8i and Subwoofers

Using with subs

All Insight 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 L8i has inherently flat 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 define all your Insight speakers as “Small” in the speaker setup portion of your processor’s menu system. Doing so ensures that all content below 80 Hz is directed to the subwoofer(s) for reproduction.

Using full range

In some installations, the Insight Series speakers may be used full-range rather than with a subwoofer. If so, we recommend using a two-pronged approach to get the lowest distortion and best performance from your Insight Series speakers.

1. Purchase and install 70 Hz in-line filters such as the ones found here, at Parts Express:
<http://www.parts-express.com/pe/showdetl.cfm?Partnumber=266-272>
2. Optionally, if your system has some basic EQ capabilities, boost the range around 60 Hz by perhaps 3 dB

The combination of these two filters will yield full-sounding natural bass, while attenuating the lowest frequencies that normally would be reserved for a subwoofer.

Care & Maintenance

To remove dust from the front of your L8i, 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 L8i 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 five 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 twenty years from the original date of purchase.

Harsh Conditions Use

The Insight Series 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 loudspeaker 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 loudspeaker that has been misused, abused, altered, or installed and calibrated by anyone other than an authorized Wisdom Audio dealer.

Any Wisdom Audio loudspeaker 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 loudspeaker 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 this loudspeaker. 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 North America only. Outside of North America, 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

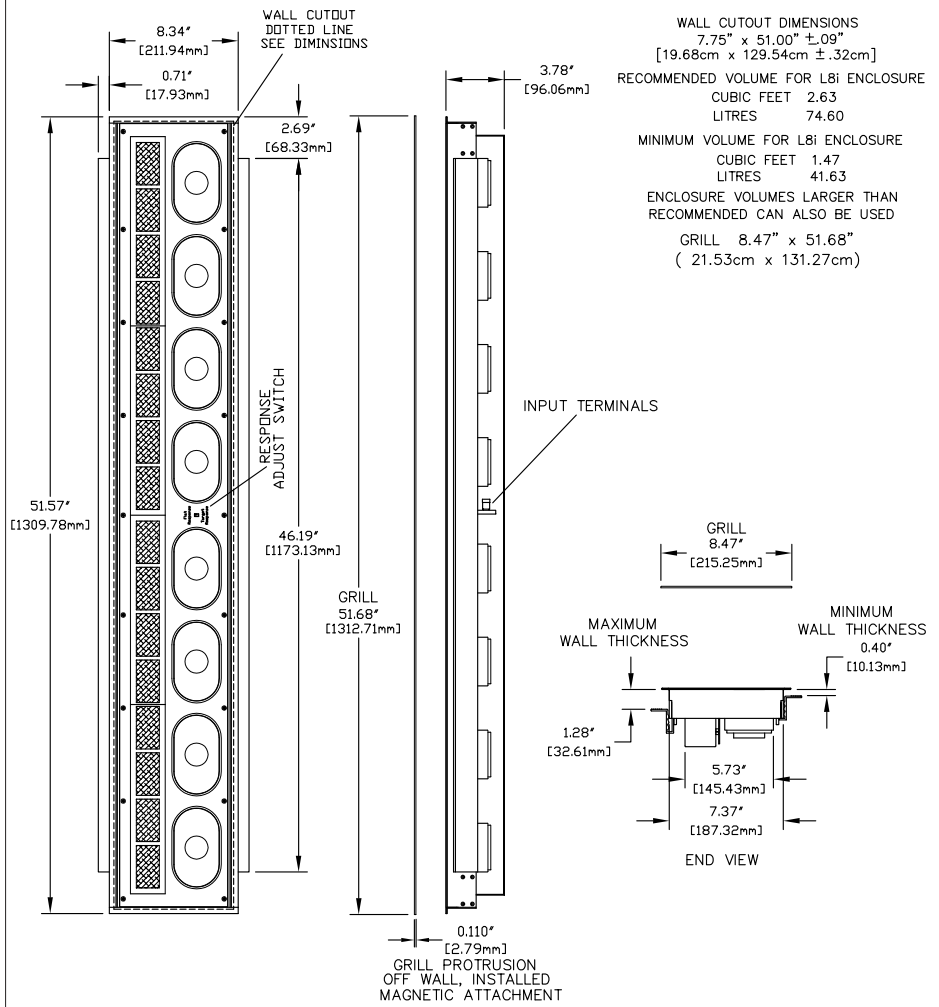
All specifications are subject to change at any time, in order to improve the product.

- **Frequency response:** 80Hz – 20 kHz \pm 2dB relative to the target curve
- **Crossover frequency:** 550 Hz
- **Nominal Impedance:** 4 Ω
- **Minimum Impedance:** 2.5 Ω
- **Sensitivity:** 91 dB/2.83V/1m
- **Power handling, peak:** 500w
- **Maximum SPL:** 118 dB @ 1m
- **Dimensions:** see appropriate Dimensions drawings on next page
- **Recommended Enclosure Volume:** 2.63 cubic feet (74.6 litres) or more
- **Minimum Enclosure Volume:** 1.47 cubic feet (41.63 litres)
- **Maximum Wall Thickness:** 1 $\frac{1}{4}$ " (3.175cm)
- **Shipping weight, each:** xx lbs. (xx kg)

For more information, see your Wisdom Audio dealer, or contact:

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L8i Dimensions



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