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# Carmelita (Model zA1.1A) Active Electrostatic Hybrid Loudspeaker

## OWNER'S MANUAL



# Carmelita Active Owner's Manual

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This Owner's Guide is available in printed form upon request.

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# Table of Contents

|                                                                      |    |
|----------------------------------------------------------------------|----|
| Safety Information .....                                             | 1  |
| Welcome .....                                                        | 4  |
| Unpacking .....                                                      | 5  |
| Carton contents.....                                                 | 5  |
| Unpacking .....                                                      | 5  |
| Stands.....                                                          | 6  |
| Grills.....                                                          | 6  |
| Cleaning.....                                                        | 7  |
| Wooden surfaces .....                                                | 7  |
| Painted and metal surfaces.....                                      | 7  |
| Grill cloth .....                                                    | 7  |
| Warnings.....                                                        | 7  |
| Quick Start .....                                                    | 8  |
| A good starting setup for audiophiles in a typical listening room:.. | 12 |
| Tips: .....                                                          | 13 |
| Connecting and Powering .....                                        | 15 |
| Cables.....                                                          | 15 |
| Power Cords .....                                                    | 15 |
| Powering .....                                                       | 15 |
| airLayer Option.....                                                 | 16 |
| Setup Details.....                                                   | 17 |
| Height.....                                                          | 17 |
| Stereo Image .....                                                   | 17 |
| Compensation for Room Troubles .....                                 | 18 |
| Exaggerated Treble .....                                             | 18 |
| Exaggerated Bass.....                                                | 18 |
| Room Boom and Suck Out.....                                          | 18 |
| Features and Specifications .....                                    | 20 |
| Warranty .....                                                       | 23 |

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## **Safety Information**

**WARNING:** DO NOT EXPOSE THESE SPEAKERS TO RAIN OR WETNESS, WHICH MAY CREATE A DANGEROUS SHOCK HAZARD, AND MAY DEGRADE OR RUIN THE SPEAKERS.

**WARNING:** DANGEROUS HIGH VOLTAGES MAY BE PRESENT INSIDE THE SPEAKERS. TO AVOID THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE AMPLIFIERS OR GRILLS OR OTHERWISE DISASSEMBLE THE SPEAKERS. THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

**WARNING:** CHANGES OR MODIFICATIONS TO THESE SPEAKERS NOT AUTHORIZED BY JANSZEN LOUDSPEAKER, LTD. MAY INVALIDATE REGULATORY COMPLIANCE AND THUS RENDER THE SPEAKERS UNSUITABLE FOR HOME USE. THIS INCLUDES KEEPING THE GRILLS INTACT.

**WARNING:** JANSZEN SHALL NOT BE RESPONSIBLE FOR ANY PHYSICAL DAMAGES OR INJURY THAT OCCURS AS A RESULT OF MISUSE, DISASSEMBLY, OR UNAUTHORIZED CHANGES OR MODIFICATIONS MADE TO THESE SPEAKERS.

**WARNING:** CONTINUOUS EXPOSURE TO LOUD SOUND CAUSES HEARING DAMAGE.

### **Caution:**

- 1. Read these instructions** – All safety and operating instructions should be read before the speakers are operated.
- 2. Save these instructions** – keep the safety and operating instructions for future reference.
- 3. Heed the warnings** – All warnings about these speakers should be followed.
- 4. Follow the instructions** – All operating and use instructions about these speakers should be followed.

## SAFETY INFORMATION

5. **Condensation** – When moving the speakers from a cold to warm location, such as during delivery on a cold winter day, moisture may condense on components within. If this should occur, the speakers might not operate properly. Consequently, after bringing the speakers in from the cold, we advise leaving them idle for a day *before connecting or powering them*.
6. **Water and moisture** – The speakers should not be used near water – for example, they should not be placed near a bathtub, pool, sink, lawn sprinkler, etc., and generally should not be placed outdoors.
7. **Heat and flames** – The speakers should be located well away from strong sources of heat or flames, such as fireplaces, propane heaters, stoves, etc..
8. **Particulates** – Smoke from tobacco or cooking, aerosol or splattered grease from cooking, and air pollution over a long period of time can have a deleterious effect on any speakers, including these. In particular, avoid spraying anything anywhere near the speakers, such as furniture polish or cleaner.
9. **Power cords** – As with any power cords, they should be routed so that they are not likely to be walked on or pinched by heavy objects. It is also important to prevent access from animals or children that may chew or otherwise damage the power cords.
10. **Liquids** – Care should be taken not to spill liquids onto the speakers.
11. **Foreign objects** – Care should be taken not to press, poke or otherwise push foreign objects into the cloth grills, such as pencils, fingers, toy airplanes, cat claws, etc..
12. **Cleaning** – Do not use abrasive cleaners. Do not spray or let anyone else spray any sort of cleaner, polish, conditioner, or anything else on or near the grills. Cleaning staff should be specifically so instructed.

*Paint:* For removing dirt and finger marks, the paint can withstand glass cleaner, lighter fluid, alcohol, kerosene, or naphtha. Avoid getting any of these substances on the wood or grills. Apply any of these to a *soft cloth*. Wipe *gently*, because wiping hard can polish away the matte finish and leave a shiny area.

*Wood:* The wooden surfaces should be wiped with nothing more than a soft cloth dampened with plain water. Do not use cleaners, polishes, conditioners, or any other chemical preparation. The final coat of wax finish on the wood will be removed by most of these.

*Grill cloth:* The grill cloth can be vacuumed.

13. **Overload** – The speakers are meant to be driven by a preamplifier, DAC, portable player, or other low-level source. When so driven, they cannot be overloaded. Do not connect them to an amplifier.

## SAFETY INFORMATION

- 14. Gain.** There is a gain control on the amplifier panel that can be used to set the maximum loudness. When connected to a preamplifier, a setting of zero is recommended, and when connected directly to a source, such as a DAC or portable player, the extra gain had by setting it to +6 is generally beneficial.
- 15. YOUR EARS** – Distortion and compression are what make ordinary speakers seem loud when the volume goes up, but electrostatic speakers do not do this.

Because your Carmelitas are capable of producing high sound pressure levels (SPL) without distortion or compression, it is easy to exceed safe loudness without noticing. As a general rule, if you can feel the bass in your belly, or if you have to shout to be heard by a person sitting next to you, it might be too loud.

A pair of Carmelitas can produce a peak SPL of over 105 dB, even in a fairly large room, 111dB in a small room, and with some kinds of music, a steady level **over 100 dB** is possible. **This can damage your ears permanently, and fairly quickly.**

If you hear ringing in your ears soon after or within a day or so of listening to loud music, you have damaged your ears, perhaps slightly, but permanently. It is also possible to damage your ears even without hearing ringing.

It is important to know --

**No one notices the usual bits of hearing loss right away after each overexposure. It adds up over time.** If you don't avoid exposure to loud sound, then at a relatively young age, music will sound dull, or certain notes will be missing, or you will hear constant noise in your ears, and you will have trouble understanding what people are saying, first in noisy places like restaurants, and then everywhere. If you think you may already have hearing loss, it's never too late to stop making it worse.

**15 minutes** is the NIOSH and CDC 2002 recommended **maximum exposure time to a steady SPL of 100 dB**, although OSHA allows 2 hours in a work setting for some reason. The time limit is 4 hours at 85 dB. This 4 hour time limit is cut in half for each additional 3 dB in loudness: 2 hours at 88 dB, 1 hour at 91 dB, and so on.

**SO PLEASE BE CAREFUL and you will not hurt your ears and thus your future enjoyment of music.**

You can measure loudness with a simple sound level meter. If you wish to check your exposure, JansZen can supply a good quality sound level meter such as we use ourselves at modest cost. Radio Shack also offers one. There are also apps for smart phones that work as sound level meters and even as spectrum analyzers; they will probably miss the high frequency extremes due to microphone quality, but these are generally relatively low in level anyway in music. Follow the instructions for the device or app to make sure your readings are valid.



## Welcome

**Y**ou have chosen JansZen loudspeakers!

The Carmelita Active will bring you the utmost in music listening enjoyment through its exceptional purity and naturalness in sound reproduction. While these speakers include esoteric technology, you can rest assured that they are designed and built with the best of advanced materials and techniques, and are ready to bring you consistent, unwavering performance for decades to come.

Please feel free to keep in touch with us, letting us know anything you'd like to tell about your listening experiences, or about great amplifiers, source gear, or music that you have found suit you and the speakers particularly well. We're also here to help with any setup challenges or other questions.

Happy listening.

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## Unpacking

**D**o not allow the delivery person to leave until you are satisfied that there has been no shipping damage.

If there is damage, please refuse the shipment, and it will automatically come back to us for repair/replacement. The situation will be harder to handle if you notice damage after the delivery person has left.

### Carton contents

The carton should contain two speakers and two power cords. If you've ordered interconnects from us, they should be included as well.

### Unpacking

The following steps will get your new speakers out of the cartons and onto your floor without mishap:

- 1) Move the carton onto a carpeted area, or lay a blanket, bath towel, or other soft material down onto the floor to use as an unpacking surface.
- 2) Set the carton on its long side with the flaps up, which matches the "this side up" markings on the sides of the carton, and slice through the tape to free the flaps. We'll call this side the top.
- 3) Remove the power cords.
- 4) Bend the flaps back as far as possible. If you are working alone, the next steps will be easier if you tape the flaps down against the sides of the carton.
- 5) Roll the carton completely over so that the top has now become the bottom.
- 6) Lift the carton away and set it aside.
- 7) Lift the blue foam insert away from the speakers.
- 8) Lift each speaker, being careful not to let the bag slip from your grip.
- 9) Clip the tie that holds each bag shut, and remove each speaker.
- 10) Unwrap the protective film from the enclosure.

## **UNPACKING**

- 11) We advise that you retain all packing materials in case you want to sell or return the speakers. The cartons can be folded flat, and the inserts can be interleaved to occupy less space.

### **Stands**

If you have ordered stands from JansZen, they will be packed separately and include their own instructions.

### **Grills**

The speakers are designed to offer optimal sound reproduction with the grills in place, and they also help protect the electrostatic elements, both from mechanical damage and from collecting particulates from the air.

The grills are permanently installed. Any attempt to remove them will cause irreparable damage.



## Cleaning

### Wooden surfaces

The final wood finish coat is wax, which will be removed by most cleaners. Wipe only with a soft, damp cloth.

### Painted and metal surfaces

These surfaces can withstand strong cleaners as well as alcohol, but **do not spray anything directly onto the speakers**. Dampen a soft cloth with your solvent or solution of choice, and wipe gently with that.

### Grill cloth

The grill cloth can be vacuumed directly with a brush attachment.

### Warnings

- **Do not spray anything near the grill cloth. Any sort of cleaner or water mist can harm the speakers if it gets through the grill cloth.**
- **The grills cannot be removed. Any attempt to remove them will cause irreparable harm.**



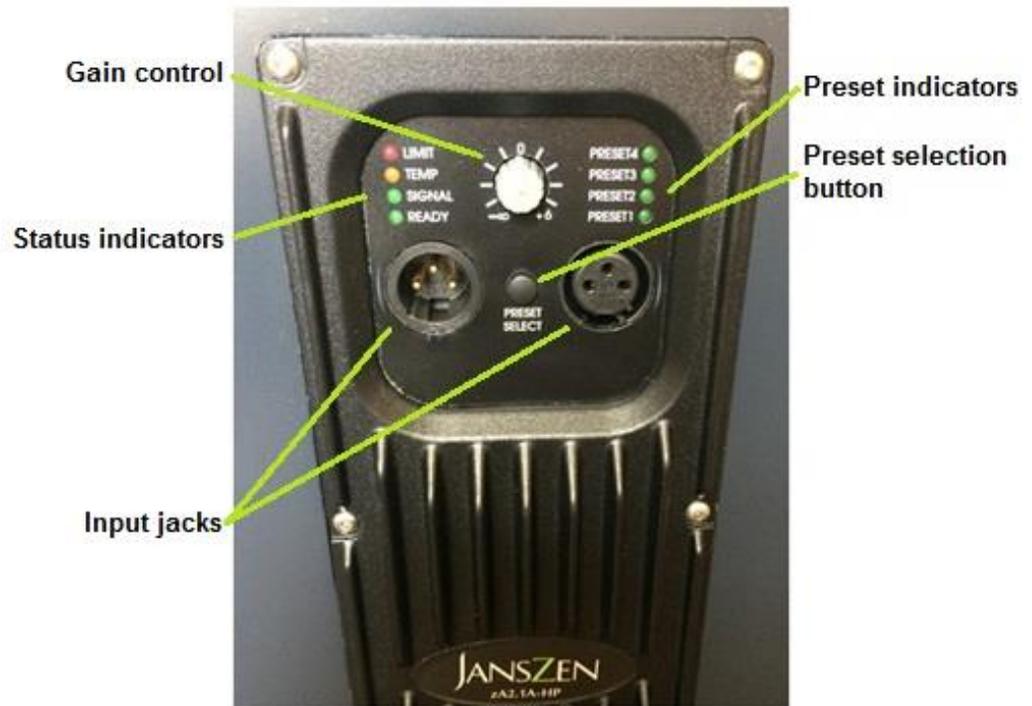
## Quick Start

**R**elative to the passive version of the Valentina/zA2.1A, the interesting thing about this model is obviously its built in biamplification and signal processing.

**Connection.** The two balanced XLR connectors are interchangeable, although the intent is for the female one, i.e., the one without pins showing, to be used as an input, and the male for daisy-chaining to other amplifiers. Balanced cables are inherently very transparent, and immune to the effects of cable length, noise pickup, and the full range of magical qualities are often ascribed to single ended (RCA) cables, which is why they're used in the studios that record and engineer the music. A brand popular with studios is Mogami, which are very well made and moderately priced. We are a reseller and can thus supply you with a pair if desired.

If your source has only RCA outputs, then you can get good results using your existing RCA cables with an adapter. If you have told us you'll be using RCA interconnects, we have supplied adapters for you to use. Again, a pro-audio market product will do the trick, and a good example is the Hosa Technology GXM133, available from Amazon or pretty much any musical instrument or pro audio shop for under \$10 each. Also, Mogami makes cables with an RCA at one end and an XLR at the other.

## QUICK START



**Gain control.** Ideally, for the very best signal to noise ratio, the gain controls should be set so that the speakers are going about as loud as they can when your source level is set at maximum. Of course, there's always some uncertainty about what is "loud as they can," so rules of thumb are probably the best way to go, namely:

- Gain at maximum (+6 dB) when driven directly from a DAC, portable player, or phone. (If you have music on your phone with at least a 224 kbps rate, you'll be impressed by how good it can sound on these speakers.)
- Gain at halfway up (0 dB) when driven from a preamp or server.

There are mild detents in the control's operation that will help you set them equally.

If you have a room situation that tends to skew the image to one side, and no balance control, you can use the gain controls for balance adjustment.

**Presets.** The signal processor has four presets stored in it. To select from among them, press the selector button. Each time the button is pressed, the next preset will be loaded. After #4, it will step back to #1. Each preset takes a few seconds to load, so be patient between presses if you want to skip any. The preset indicator will flash quickly until loading is complete.

## QUICK START

The standard presets are compensations for four general setups. The depth of bass extension is reduced for higher degrees of bass reinforcement to prevent risk of excessive woofer excursion at high SPL. Note that the preset indicators on the amplifier panel are positioned with #4 at the top and #1 at the bottom, which is why they are tabulated this way below:

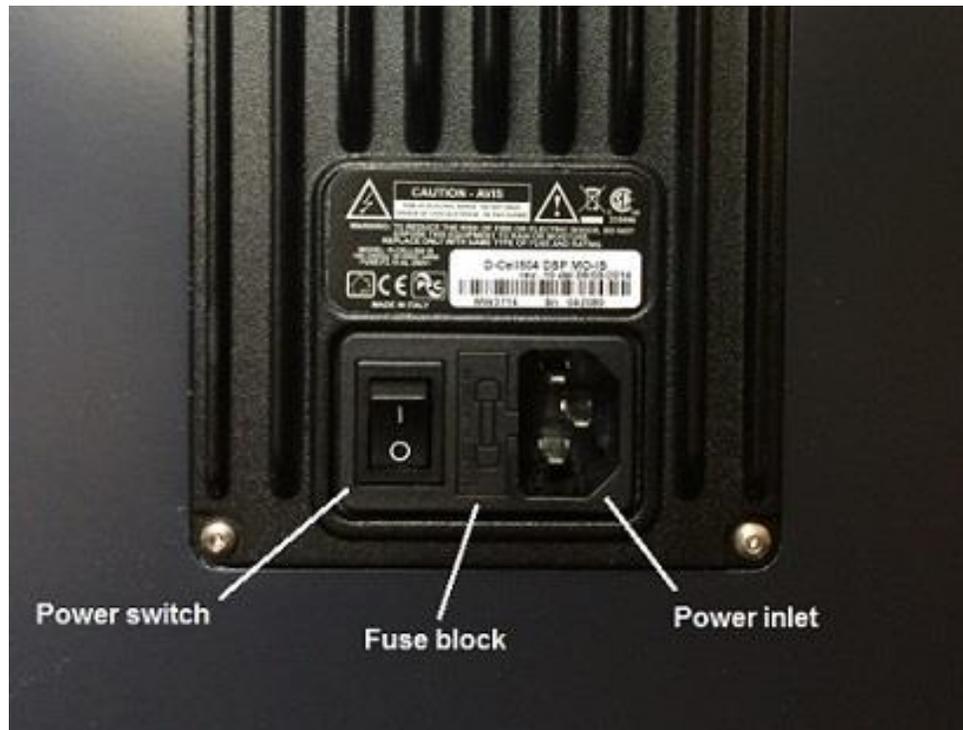
| Preset   | Name                 | Effect                                              | Ideal Placement                                                                                 |
|----------|----------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Preset 4 | Near Field / Console | Bass boost, time alignment, various compensations   | On console or desk, less than 48" [122 cm] from ears, walls at least 48" [122 cm] away          |
| Preset 3 | Far                  | Moderate bass boost                                 | 20" – 30" [50 – 75 cm] from front wall in large room or far out into small to medium sized room |
| Preset 2 | Normal               | Flat bass response with moderate subsonic extension | 20" – 30" [50 – 75 cm] from front wall in small to medium sized room                            |
| Preset 1 | Wall hugger          | Bass cut and various compensations                  | Very near front wall or in corner                                                               |

If you have requested special preset programming, this will be documented elsewhere.

**Status lights.** The four status lights signify the following:

- **Limit** lights up while the DSP voltage limiter is engaging or the amplifier is clipping. Voltage limiting is not implemented because it is not required to protect the drivers.
- **Temp** shows when the amplifier is overheated. I've never seen this happen, but if an amplifier ever does shut down and go silent while it cools down, this light will confirm that the shutdown is not caused by a catastrophic malfunction, and will start working again shortly.
- **Signal** registers briefly when a cable is first plugged in, and when a signal is present on the input. (It is also an indicator for when the DSP is being programmed at the factory.) It can indicate excessive levels of hum or noise on the signal line, or a signal line that's disconnected at the far end.
- **Ready** indicates when the clock is running, the DSP is loaded up, and the amplifier can start producing an output signal.

## QUICK START



**AirLayer.** The airLayer level setting is considered set-and-forget. It's adjusted to suit your taste and room situation by way of a slotted shaft that's located at the bottom of a white bushing below the side tweeter on each speaker.



## QUICK START

A small screwdriver is supplied for adjusting this control.

There will be recordings that benefit, and those that do not, so you may find yourself only occasionally using the airLayer, or conversely, occasionally not using it. Once the desired airLayer level has been found, it may be switched entirely on or off using the button located below the amplifier panel.



There's a section dedicated to the airLayer farther along in this guide.

**A**t mid and high frequencies, the Carmelitas' directivity keeps the stereo image from being affected much by room placement in all but the most reflective rooms. As with any non-dipole speakers, though, the bass is practically omnidirectional, so nearby walls will reinforce it.

### **A good starting setup for audiophiles in a typical listening room:**

- The speakers should be mounted on stands that position the center of the rectangular grill at ear height. A few inches upward or downward won't matter, though. The center is about 12" [30 cm] from the bottom of the speaker, so the stand should be about 12" [30 cm] shorter than your ear height. It's alright to use a stand with a tilted platen to get the same effect, but in that case, make sure to account for your distance from the speakers when selecting the height.

## QUICK START

- The speaker with the even serial number should be placed to the right, and the odd to the left. The speakers are acoustical mirror images of each other, and optimal sound occurs inboard when so arranged. If your pair does not have the airLayer option to indicate handedness, the speaker with the even serial number should be placed to the right, and the odd to the left. If they do have the option, no need to check the serial numbers, because the side tweeter should be aimed outward (toward its near side wall, not toward the center).
- An equilateral triangle is a popular arrangement, that is, an equal distance between the speakers, and also between each speaker and you. Of course, some will prefer or be practically limited to a smaller angle between the speakers, which is perfectly fine. It can be argued that an equilateral triangle setup is merely an artifice cooked up in the early days of hi-fi in an attempt to standardize things. In reality, in most cases, it makes little difference, other than the obvious, namely stage width.
- Aim directly at your listening position, or if they seem bright or sparkly to your ears, slightly less toed in than directly at your listening position, so that their axes cross a foot or two behind you.
- Distance from the front wall should be according to the Preset table above.
- Positioned a different distance from the side walls as from the front wall, to prevent overlap of the Allison effect reinforcement spectra. For smoothest bass, the side wall distances should be asymmetrical, with the pair shifted a foot or so to one side, or for absolute best imaging, they should be symmetrical.

### Tips:

- Not enough bass for a given Preset? Try moving them closer to walls, or even into corners.
- Lumpy bass? Try making the side to side position asymmetrical or move your listening position farther or closer.
- Imaging problems?
  - If your back wall is closer than about 10 feet [3 meters] behind you, try adding some absorption (if your room is lively) or diffusion (if your room is already well damped) to that wall.
  - If your listening seat has a high back, change to a seat with a back that does not come higher than your shoulders.
  - Try moving the speakers farther from the front wall, while realizing that the trade-off will be less bass or the need for a higher numbered Preset.
  - Add absorption or diffusion at the side wall first reflection points.
  - Make the side to side position symmetrical
- Upper treble response can be rolled off to taste by reducing toe-in.

## QUICK START

- Changing the height, although less conveniently done, will also tailor the treble response, and also vary the degree to which floor-ceiling bass modes are excited.
- For recordings made using a Blumlein microphone arrangement, a 90° angle between the speakers is best, although this is hard to arrange in most rooms without sitting very close to the speakers, which not everyone will want to do, and where the drivers do not converge as well in time. In many cases, a very wide arrangement is just more enjoyable for the extra soundstage width, and the image is crisp enough to support this without degrading focus.
- For the most holographic effect, try two-microphone recordings, especially binaural!

## 6

## Connecting and Powering

### Cables

We recommend Mogami “Gold” model cables. These are popular among music studios, very well made, and not very expensive. They’re available with an XLR at both ends, as well as XLR at one end and RCA at the other. The amplifiers work equally well with single-ended or balanced connections in most home audio situations. Balanced cables are better, however, for long runs, such as through walls from another room, because they’re better at rejecting noise pickup.

### Power Cords

The cord delivers power for the amplifier and the bias supply that charges the electrostatic panel membrane. The amplifiers are well isolated from power line problems, and the supply circuit is unrelated to the signal path. The speakers have no susceptibility to airborne or power line borne electrical interference.

We thus doubt that is any benefit to using special power cords, and those supplied with your speakers are those that we’re satisfied provide optimal performance.

The bias supply and amplifier will work correctly with any mains voltage, and if the speakers are moved internationally, suitable power cords for any wall socket arrangement can be obtained worldwide and used without concern for converting/adapting the voltage.

### Powering

As implied in the previous section, the speakers must be powered to obtain. You may note that there is an on/off power switch. The speakers may be left powered on at all times without harm, but if they will be left idle for an extended time, or if the air often contains smoke or other contaminants, it is best to power them off.

You may notice that the amplifier is quite warm at all times. This is normal and related to the operation of the power supply.

The speakers can be powered on at any time relative to the other equipment.

## 7

## airLayer Option

The Carmelita speakers are very directive in the vertical, and rather directive in the horizontal. This serves to minimize the involvement of the room, thereby making setup easier, and maximally conserving the recorded ambiance and the precision of the image. The speakers' extremely high phase fidelity can produce a holographic image that extends beyond the speakers and can even in some cases wrap around you.

With recordings that do not have realistically recorded ambiance with well conserved phase information, a potential drawback is the perception of a closed-in soundstage, extending only from one speaker to the other.

The airLayer option comprises a high-grade dome tweeter mounted on one side of each speaker, firing sideways, e.g., outboard toward its near side wall. The purpose of bouncing some sound off the side walls is to widen the soundstage, more or less simulating the side walls in a performance venue, and provide a sense of spaciousness that can be missing from directive speakers such as these when the recording does not contain accurately recorded ambiance.

Each airLayer tweeter is fully adjustable. You can thus adjust their output to taste and to account for the distance to side walls and how reflective the side walls are. If you have a scattering surface (a diffuser) at each side's first reflection point, you might find that turning them up all the way provides a positive effect. In most cases, however, they should be set so they don't call attention to themselves, but just give a greater sense of spaciousness.

You can accommodate an asymmetrical room by adjusting them differently from one another, such as if you have an open area to one side and a wall at the other.

When recordings do have realistically recorded ambiance with well conserved phase information, such as good two-mic or binaural recordings, you can switch each airLayer tweeter off by pressing the button below the amplifier.



## Setup Details

### Height

The Carmelita speakers are very directive in the vertical. There is thus about a 22 cm [9"] range of ear height that will experience full spectrum sound. It is thus important to ensure that your speakers are placed so that the center of the rectangular electrostatic element within an inch or two of your ear height when you are seated.

The center is about 12" [30 cm] from the bottom of the speaker, so the stand should be about 12" [30 cm] shorter than your ear height. It's alright to use a stand with a tilted platen to get the same effect, but in that case, make sure to account for your distance from the speakers when selecting their heights.

### Stereo Image

The stereo image will be good when an equilateral triangle is created by the speakers and the listening position. On the other hand, there is a strong argument that this angle was simply made up for no good reason other than memorability, and everyone should use whatever they want.

It is very important to avoid the use of a high-backed chair that will reflect unwanted sound into your ears with practically no delay, even when the headrest appears to be made of soft, sound-absorbent material. This has a disastrous effect on realism as well as the stereo image.

For maximal seating width, you can try reversing the positions of the speakers, placing the even serial numbered unit on the left, and aim them so their axes cross a couple or a few feet ahead of your listening position, rather than behind it.

Lastly, if the back wall is less than a few meters [ten feet] behind the listening position, and your room acoustics are relatively lively, it is helpful to add absorbent material there, such as heavy curtains, a decorative carpet, or purpose built absorbers. If your room is

## SETUP DETAILS

already relatively well damped, then diffusion is preferable back there, and this will control the direct reflections without decreasing “air”.

### Compensation for Room Troubles

To start, in a moderately lively, fairly large room, you will probably get the best sound when the speakers are toed in so that they face you, or in some cases toward a position a couple of feet behind you. This will also give the widest seating area with uniform sound from both speakers.

#### Exaggerated Treble

There are no on-board means for recusing treble, unless you’ve got a custom selection of presets. You can reduce the high frequencies by reducing the amount of toe-in, although this will affect the highest frequencies most strongly.

The upper treble might be exaggerated by reflections from the wall behind the listening position, or by a generally lively room, that is, one with lots of hard surfaces and not many soft ones. Adding absorption is the cure for this, and the topic is covered well in many places on line and in print.

You can also try reversing the positions of the speakers, placing the even serial numbered unit on the left and the odd on the right, then aiming them so their axes cross a couple or a few feet ahead of your listening position, rather than behind it. By aiming the speakers more at the far side walls than the near ones, this will increase the mean distance from the speakers to the side walls and thus reduce the net amount of wall splash.

#### Exaggerated Bass

If you find that it is necessary to place the speakers near walls or into corners, the bass will be reinforced by the nearby surfaces. Preset 1 is the likely cure for this.

Note that there is no file player software at this time that can perform DSP directly on DSD files, i.e., your player EQ will only work on PCM files. If you need your player to EQ DSD files, you’ll need to set it to convert the streams to PCM.

#### Room Boom and Suck Out

Room resonant modes can cause certain bass notes to be greatly exaggerated and others to be nearly missing. Properly tuned and positioned bass traps are the ultimate solution, but no one will blame you if you don’t want to bother or don’t like how they look.

You can make some headway against these effects with no additional hardware by decreasing the setup symmetry. This is done by placing each speaker a different distance from each side

## SETUP DETAILS

wall or rotating your entire listening triangle 10 or 15 degrees relative to the walls or both. Fore and aft adjustment of the listening triangle will also have an effect.

By changing one's seating height, one can get one's ears more or less away from where the floor/ceiling mode has its strongest effect. One can either retain the horizontal positioning of the speakers, thus moving your ear height in lock step with the speaker height, or tilt the speaker to create a difference in the speaker height vs. your ear height.

### Fuse replacement



9

## Features and Specifications

- Bi-amplified with electronic crossover and EQ
- Frequency response -- 30 Hz - 40 kHz +/- 3 dB on axis (in room)
- Peak SPL -- 105 dB (pair playing music at 4 m [13'] in mid-sized room -- 4.5 m x 7.3 m x 3.0 m (15' x 24' x 10'))
- Fully enclosed, not dipoles, makes placement easy
- Listening area
  - Full spectrum 2 m wide @ 4 m (6.5' wide @ 13')
  - Very tight vertical dispersion and relatively narrow horizontal dispersion conserves recorded ambience, reduces interaction with the room, and sharpens the soundstage, yet is wide enough to avoid a headphone effect
- Crossover -- 1st order @ 500 Hz -- far below the disturbance-sensitive hearing region of 1 kHz - 3 kHz; entire midrange and treble carried by the electrostatic elements; minimum phase operation through crossover region
- Secondary partial crossover -- 1st order at 5 kHz -- limits upper treble from half width of ESL panel -- controls dispersion and flattens response without an electrical rolloff network
- 2.5.5 way, quasi-line configuration
  - Woofer mounted below ESL array; ESL panels employ half-split-response (1.5 way ESL), additional woofer in back covering deep bass only
  - Woofer radiation pattern mates well to ESL array
  - Excellent phase alignment for soundstage focus
  - Vertical image stability
  - Recorded image height is well presented, even above tops of speakers
- Four DSP presets; standard are: very near wall; normal; far; and console
- ESL panels
  - One panel in each speaker, mounted in a barometrically isolated sub-enclosure, 18 cm wide x 20 cm high [7"H x 8"W]
  - Protected by an integral barrier
  - 260 square cm [40 square inch] forward radiating area per array
  - Tough, stable, injection molded, ABS stator frames
  - 66-element, parallel wire, stator electrodes (total of 132 electrode elements per panel)

## FEATURES AND SPECIFICATIONS

- Unique panel construction and materials are immune to the effects of wide and rapid temperature and humidity swings
- Optimal sonic membrane material
  - Thickness less than 1/15th of a sheet of 20 lb paper -- lighter than the air it is driving
  - Acts as a virtual air driver with force applied evenly over its whole surface -- no breakup, no coloration
  - Properly damped, unlike see-through electrostatics
  - Introduces absolutely no midrange or treble coloration, and distortion is far below audibility
  - Will not lose its tension or degrade over time
- 1.5 way tweeter/mid design controls horizontal dispersion and eliminates electrical EQ network
- Woofers
  - 16.5 cm [6.5"], paper cone, extra low distortion, low inductance, high resolution, very long excursion driver with neodymium magnet structure
  - Operate far below their breakup frequencies and their Xmax for practically no cone coloration
  - Seamless acoustical integration with the ESL
  - Strong, accurate bass, not boomy dance club bass
  - Direct connection to amplifier creates maximal damping factor and thus maximizes cone control
- Enclosure
  - Sealed (acoustic suspension) for best woofer transient response, minimal group delay, and best integration with electrostatic panel
  - High mass, 25 mm [1"] thick, well damped, well braced walls for negligible enclosure radiation
  - Baffle step (diffraction interference) is reduced with front edge scoops, which are also visually interesting
- Amplifiers
  - Input
    - True balanced XLR
    - Operates well, however, with RCA adapter (supplied upon request).
  - Input impedance: 10 k $\Omega$  balanced to ground
  - Maximum gain: 32 dB (x40 voltage gain)
  - S/N ratio: >113 dBA (20 Hz – 20 kHz, A weighted)
  - Damping factor: >1000 (20 – 1000 Hz)
  - Distortion: < 0.0005% (THD, DIM, SMPTE)
  - Mains power – <150 Watts playing music at full gain (assuming 12 dB crest factor, 6  $\Omega$  average impedance), <1A on 120V mains – 95% efficiency typical, starting from 1/8th maximum power -- very green
  - Works from any mains worldwide without adjustment
  - Built-in surge protection
  - IEC cord inlet with power switch -- uses standard power cords worldwide

## FEATURES AND SPECIFICATIONS

- Diaphragm polarization supply
  - Mains power -- 0.1 Watts to 1.0 Watts, depending on mains voltage -- very green
  - Works from any mains worldwide without adjustment
  - Built-in surge protection
  - IEC cord inlet with power switch -- uses standard power cords worldwide
  - No transformer or oscillator -- high reliability, and no radiated or conducted noise to affect your other components
- Weight -- 16 kg [35 lbs] each
- Dimensions: 43 cm high x 20 cm wide x 33 cm deep [17" H x 8" W x 13" D]
- Heirloom quality materials and finishes used throughout for lifetime operation, yet all are recyclable
- Designed, engineered and made in the USA
- Warranty -- 5 years on all components against defects in materials and manufacturing
- Modular construction and simple disassembly for straightforward repairs, even in the field
- Miscellaneous
  - 10 mm [3/8"] thick, wool felt to kill internal edge diffraction
  - Appearance options available (custom finishes/paints, custom wood veneers)

10

## Warranty

### LIMITED FIVE YEAR WARRANTY

- I. *Acceptance.* Acceptance of ownership of the merchandise occurs upon acceptance of delivery.
- II. *Shipping damage.* The shipment should be examined for shipping damage prior to acceptance. Shipping damage will not result in cash costs to the buyer.
  1. *Obvious damage.*
    - i. If such damage is discovered, delivery should be refused, so that JansZen may most credibly negotiate with the shipping company.
    - ii. JansZen shall be notified of the event ASAP.
  2. *Occult damage.*
    - i. If after acceptance damage is found that was not initially noted but is attributable to handling in transit, the applicable claims procedures of the shipping/freight company apply.
    - ii. Details of the damage shall be reported to JansZen either verbally, in text, graphically, or photographically, as required to accurately convey the description.
    - iii. At JansZen's sole discretion, the damaged goods may be returned to JansZen for inspection or inspected on site, if this is in accordance with the shipping/freight company's policies.
    - iv. At JansZen's sole discretion, the damaged goods may be repaired or replaced.
  3. *Time frame* – We will make every effort to return the owner's speakers within a four week period. This allows a week for the carrier to do its investigation, a week in transit each way, and a week at our plant.
- III. *No defects warranty.* JansZen systems may contain both electronics and acoustical radiators, which are warranted separately.
  1. The speaker elements (acoustical radiators), mechanical parts, and passive electrical parts are warranted against failure caused by manufacturing or material defects for five years.

## WARRANTY

2. Any active electronics are warranted against failure caused by manufacturing or component defects for two years.
  3. Systems or components in need of repair or replacement during these periods will be repaired or replaced at no cost to the owner, or the purchase price refunded. JansZen will be the sole determiner of which action is taken.
  4. This warranty covers only non-commercial use of the product.
  5. This warranty does not apply to failures that are the result of violating JansZen recommended or generally accepted maintenance or usage practices, nor to any of the following, including but not limited to: applications and uses for which this product was not intended; altered product or serial numbers; cosmetic damage or exterior finish; accidents, abuse, neglect, fire, water, lightning or other acts of nature; fluctuations and surges; failure to follow operating or maintenance instructions.
  6. This warranty applies only to JansZen products sold directly by Janszen or by an authorized JansZen reseller.
  7. JansZen will be the sole determiner of whether a product is indeed defective.
  8. Replaced or repaired units will assume the remaining warranty period or 90 days, whichever is longer.
- IV. *Satisfaction warranty.* If the buyer wishes to return the speakers within 30 days of acceptance for any reason, they may be shipped to JansZen at the buyer's cost in its original condition and packing materials. If there is no damage traceable to the owner, the refund will be in full. If there is such damage, repair costs will be deducted. Shipping damage will be handled in accordance with the carrier's rules and procedures and not affect the refund to the buyer.
- V. *Entire agreement.*

THE FOREGOING WARRANTY IS THE ONLY WARRANTY WITH RESPECT TO THE SPEAKERS, AND WE MAKE NO OTHER WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, REGARDING THE DEVICES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL JANSZEN, OR ITS AUTHORIZED RESELLERS BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, EVEN IF SUCH DAMAGES RESULT FROM NEGLIGENCE OR OTHER FAULT.

### Registration for warranty.

If you have purchased your speakers directly from JansZen, YOU ARE AUTOMATICALLY REGISTERED FOR THE WARRANTY.

If you have bought them from an authorized dealer or from another owner who has a valid warranty still in effect, REGISTER YOUR PURCHASE FOR WARRANTY by calling JansZen at +1 (614) 448-1811 or emailing [warranty@janszenaudio.com](mailto:warranty@janszenaudio.com)