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GROUNDBREAKING!

Shunyata's Revolutionary Altaira Grounding System

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BRAVE NEW WORLD

BY ROBERT HARLEY

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SHUNYATA RESEARCH ALTAIRA GROUNDING SYSTEM

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SHUNYATA

Research's Altaira Grounding System is a new product category that will be unfamiliar to most audiophiles—it was certainly new to me. The system is composed of one or more passive "hubs" to which you connect the ground terminals of your components via specially made cables that are part of the Altaira line. The hubs are small metal chassis, each with six equipment-grounding posts on the rear panel—there are no front-panel controls or indicators. A seventh ground post connects to a ground terminal on your power conditioner or to the ground pin of an AC outlet via an adapter plug. The Altaira ground cables feature interchangeable terminations so that they will work in any system and adapt to component upgrades.

The idea behind Altaira is that the chassis grounds of all components are noisy; draining this noise from the components can improve sound quality. The only other component-grounding systems I'm aware of are Nordost's QKOR, the British CAD, and the Entreq, none of which I've tried..

Connecting the chassis of all the components in a system to a true ground reference is hardly a new idea. In fact, it's been standard practice in the telecommunications, broadcast, and professional-audio industries for decades. I've installed and wired racks of pro-audio gear in which a thick braided cable runs from each component's chassis to the metal rack which is then connected to earth ground. Shunyata has taken this concept to the next level by channeling chassis noise to a ground reference with an ultra-low-impedance path and then dissipating that noise through the company's proprietary filtering technology within the hubs.

The term "grounding system" is a bit of a misnomer. All components are already grounded via a safety ground in which the components' chassis are connected to an electrical ground to prevent the chassis from accidentally becoming charged with a lethal voltage. A better description of what the Altaira system does is evacuate noise on chassis grounds by channeling that noise from the audio component's chassis and dissipating it with filters. As we're about to see, reducing chassis noise is a more complex subject than first meets the eye.

I AS WE'RE ABOUT TO SEE, REDUCING CHASSIS NOISE IS A MORE COMPLEX SUBJECT THAN FIRST MEETS THE EYE.

THE ALTAIRA SYSTEM

An Altaira system can be as simple as one grounding hub and a few ground cables or as complex as multiple hubs in a "networked" system with "segmented" grounding. Your approach depends on your system complexity and budget. I'll give you an overview here, but you should check out Shunyata's website for excellent and extensive documentation on how to choose the right Altaira products for your system. Your Shunyata dealer is also a good resource; he'll likely have firsthand experience with adding an Altaira system to the brands of components in your system. I've shown several system configurations in the sidebar to give you an idea of how the Altaira system is scalable according to your system and your ambitions.

The Altaira hub comes in two versions, Chassis Ground (CG-NR) and Signal Ground (SG-NR), each with different filter characteristics. Basic systems will employ one Chassis Ground hub and as many ground cables as you have components. The Signal Ground hub is reserved for what Shunyata calls "segmented grounding" that groups certain components together on their own ground hub, such as all digital gear on one hub and all analog gear on another. Segmented grounding provides greater noise isolation between components. Note that you can start with one Chassis Ground and expand Altaira in the future. Systems with mono components (a preamp with separate chassis for left and right channels, for example) can be further segmented by grounding each channel with separate hubs. As you can see, the components in the Altaira system are modular and scalable to any system, from one hub up to the five hubs in my review system.

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The hubs sell for $2998 each and ground cables range from $400 to $1290 depending on length and type. Five levels of ground cables are available that follow the naming convention of Shunyata's signal cables from Venom at the entry level to Omega at the top, in ascending price and quality. Most systems will start with one Chassis Ground and several Venom cables, bringing the price of entry to about $4k. As mentioned, you can expand the Altaira system over time by adding hubs and without trading in or selling your existing Altaira hubs and cables.

My reference system is quite complex, with a four-chassis line-stage, dual-chassis phonostage, DAC and server, four-chassis power amplifier, and an active crossover (see Associated Equipment for the specifics). As it happens, the CH Precision 10-Series components that are my reference are fitted with chassis-ground banana jacks, making connection to the Altaira hubs simple. In fact, CH Precision designed this feature into the 10-Series specifically for the purpose of connecting a grounding system; the designers were aware of the performance advantages offered by external grounding. Shunyata wanted me to experience the full effect of Altaira, so they set me up with three Signal Hubs and two Chassis Hubs. They also sent optional machined-metal feet for the hubs that replace the stock rubber feet ($450 for a set of four feet). Grant Samuelson and Lena Davidson from Shunyata visited to install Altaira in my system.

If your equipment lacks dedicated ground connections (most don't offer this feature), you can connect one end of the ground cable to the hub (via banana or spade) and the other end to a chassis screw. Alternately, the component-end of the ground cable can be plugged into an unused RCA jack. As mentioned, the ground cables have interchangeable terminations—in this case you'd have a banana plug on one end of the ground cable and an RCA plug on the other. Before connecting the ground cable to the chassis screw or RCA jack, however, you'll need to measure the resistance between the chassis screw or outer ring of the RCA jack and the ground pin on the component's IEC power-input jack with an ohmmeter. The reading should be zero ohms (or a fraction of an ohm), indicating that these connection points are true grounds. Digital components can be grounded with a ground-cable adapter for connecting to an unused USB port, BNC jack, or AES/EBU connector.

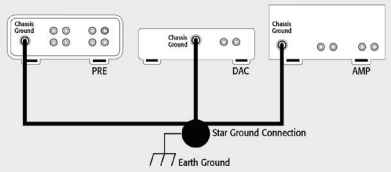
I WAS SURPRISED BY HOW THE ALTAIRA SYSTEM REMOVED A LAYER OF GLARE AND GRAIN OVERLAYING TIMBRE, MAKING TEXTURES MORE LIQUID THROUGH THE UPPER MIDRANGE AND TREBLE.

Again, I highly recommend reading Shunyata's literature on its website explaining grounding concepts as well as the specific process for selecting the right Altaira components for your system. Shunyata has also been educating dealers and demonstrating the system to them; your dealer will be a good source of information and insight.

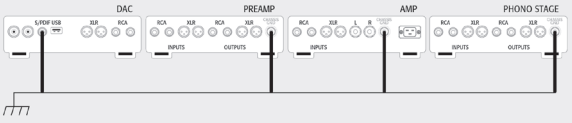
SHUNYATA RESEARCH ALTAIRA GROUNDING SYSTEM

AS DESCRIBED in the review, the Altaira system is scalable not just in the number of components it can accommodate, but also in how those components are grounded. Below are seven diagrams, two showing the primary generic types of ground connection ("buss" and "star") and five depicting various grounding architectures with the Altaira system.

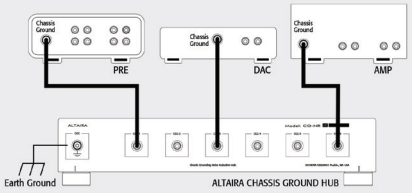
Star Ground Systems



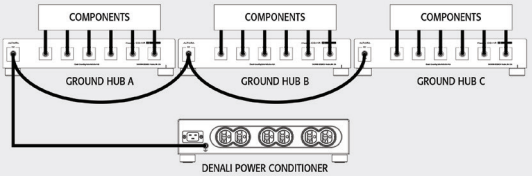
Buss Grounding Architecture



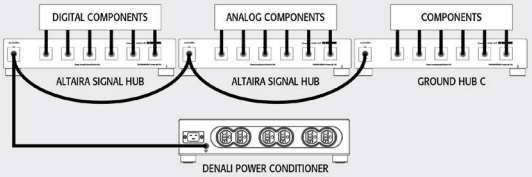
Hub Based Ground System



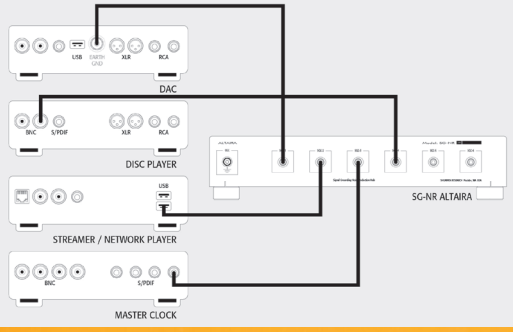
Network Grounding System



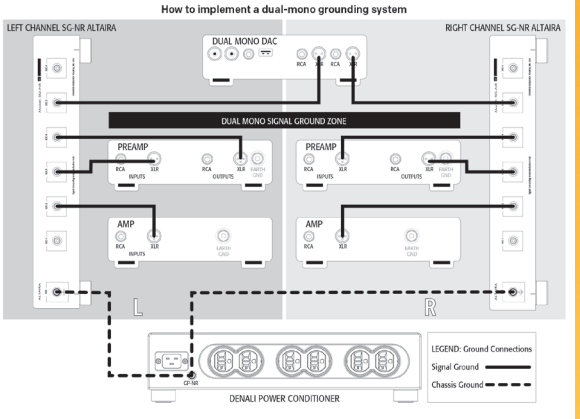
Segmented Ground Hubs



Digital Component Stacks



How to implement a dual-mono grounding system



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LISTENING

This assessment of the Altaira system's effect on the sound of an audio system comes with several important caveats. First, because this is a new product category—and one *entirely* new to me—I'm reviewing the Altaira in isolation without having experience with other grounding systems. Second, this review represents the Altaira's performance in a single system—one that is extremely complex (the linestage, phonostage, and power amplifiers consume ten chassis, for example). I suspect that the performance will be variable depending on the system. But I can report with confidence precisely how Altaira changed the sound of my reference system.

The best way to evaluate Altaira is to install it in your system, listen for a couple of weeks, and then take it out. For some reason, its effect isn't nearly as obvious right after installation. But once you get accustomed to its effect, you won't want to listen without it. Removing Altaira throws into stark relief just how profound a difference it makes.

Based on my experience hearing lower and lower noise levels in my system with continuing improvements in AC conditioners, AC power cords, The Chord Company's GroundARAY, and signal cables designed to reduce noise (AudioQuest Dragon, for example), I expected the Altaira to deepen the soundstage and increase low-level resolution. (See my editorial "Noise: The Final Frontier" in Issue 323.) The Altaira system did all that—in spades—but that was just the beginning. Surprisingly, Altaira affected many other performance areas that I didn't think would be affected by reducing chassis noise.

The best single word to describe Altaira's effect is "clarity"—of timbre, of instrumental lines, of image delineation, and of soundstaging. Altaira snaps the sound into a more coherent presentation, with each instrument separated from others spatially and tonally, but with those parts seeming to "fit together" with greater expression. Everyone has heard how a great band locks into the groove; Altaira seems to emphasize this coherence between the musicians. This was particularly true of the way kick-drum and bass guitar work together to drive the rhythm. I heard a tighter, more propulsive, and upbeat rhythmic flow—what the British call "pace, rhythm, and timing"—with Altaira. Moreover, every instrument in the orchestra, small ensemble, or jazz combo had its own distinct voice to a greater degree, with more body and dimensionality to the images and increased purity and density of timbre. Even a simple jazz trio—the Bob James' album *Espresso*, for example—benefited from this increased coherence and ability to hear each instrument as a separate entity yet fitting into the whole in a more musically compelling way. Large ensembles benefitted to an even greater extent—listen to "The Cowboy's Overture" from *John Williams at the Movies*; the passages with dense arrangement and diverse instrumentation took on a greater sense of realism, as each instrument or section was portrayed with more lifelike timbre, more tightly focused imaging, and greater clarity.

The Altaira's effect on imaging was interesting. In addition to producing tighter focus, Altaira seemed to make images more tangible and three-dimensional. Instrumental and vocal images had greater body and solidity, heightening the impression of hearing the instrument itself rather than a flat hi-fi recreation of it. That almost spooky feeling an audio system can sometimes create of a corporeal presence in your listening room occurred more readily and with more recordings after installing Altaira. This lifelike rendering was no doubt amplified by the Altaira's increased resolution of air and bloom around image outlines. The sense of each instrument occupying its own space, laterally as well as along the depth axis, combined with the sense of image body and tangibility to give the music greater palpability and presence. Of course, I've heard a similar phenomenon when switching to a superior power amplifier or better DAC (for examples), but the Altaira's effect was somewhat different in the way it simultaneously heightened the impression of three-dimensionality and presented images in acoustic space.

SPECS & PRICING

Chassis Ground (CG-NR) and Signal Ground (SG-NR)
Ground posts: Six for component connection, one master ground post
Dimensions: 14.1" x 3.4" x 5.6"
Weight: SG-NR, 7.5 lbs.; CG-NR, 8 lbs.
Price: $2998 each hub; ground cable price varies from $400 to $1290

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ASSOCIATED EQUIPMENT
Loudspeakers: Wilson Audio Chronosonic XVX with dual Wilson Subsonic subwoofers, Wilson ActivX crossover.
Analog source: Basis Audio A.J. Conti Transcendence turntable with SuperArm 12.5 tonearm; Air Tight Opus cartridge; CH Precision P1 phonostage with X1 power supply; DS Audio ST-50 stylus cleaner, Levin record brush, Degritter ultrasonic LP cleaner
Digital source: Wadax Reference DAC, Wadax Reference Server, UpTone Audio EtherREGEN Ethernet switch
Amplification: CH Precision L10 Dual Monaural linestage; CH Precision M10 Dual Monaural power amplifiers
AC Power: Shunyata Everest 8000 conditioner, Shunyata Omega and Sigma NR V2 power cords; Shunyata AC outlets, five dedicated 20A lines wired with identical length 10AWG
Support: Critical Mass Systems Olympus equipment racks and Olympus amplifier stands; Center Stage² isolation, Arya Audio RevOpods isolation
Cables: AudioQuest Dragon interconnects, AudioQuest Dragon Zero and Dragon Bass loudspeaker cables
Accessories: The Chord Company GroundARAY noise reduction
Acoustics: Acoustic Geometry Pro Room Pack 12, ASC 16" Round Tube Traps
Room: Purpose-built; Acoustic Sciences Corporation Iso-Wall System

IT HAS BECOME AN ESSENTIAL COMPONENT OF MY REFERENCE SYSTEM, AND I SUSPECT THAT IF YOU AUDITION ONE, YOU WILL FIND IT EQUALLY INDISPENSABLE.

I was surprised by how the Altaira system removed a layer of glare and grain overlaying timbre, making textures more liquid through the upper midrange and treble. This quality was most obvious on brass instruments; I heard more body, weight, tone color, and textural density—and less metallic sheen. I could listen at louder levels without certain notes in the upper register affronting my ears. The modern big-band albums by Gordon Goodwin's Big Phat Band feature innovative compositions and arrangements, virtuoso ensemble playing, and inspired solos, but the recordings are a little bright. There's a tension when I listen to these albums; I want to hear the full measure of energy that defines the big-band sound along with this band's tight rhythm section, but I have to temper the volume because the horns can be too "hot," particularly in their upper registers. I won't say that the Altaira system transformed these recordings, but they did take some of the edge off the brass and woodwinds by reducing glare. This isn't to say that Altaira reduced the sense of presence and immediacy or altered the tonal balance. Rather, Altaira simply increased the realism by reducing an artifact that we've become inured to in reproduced music—a bit of mechanical patina overlaying instrumental timbre. I also heard this on vocal sibilance; it's still there with Altaira, but the offensive "sizzle" component is softer and less prominent. This quality was apparent over a wide range of vocals, from Beth Hart to Melody Gardot to Diana Krall. I heard this specifically while listening for it during analytical listening, but when listening for pleasure, the natural presentation of vocal sibilance had the effect of creating a more relaxed and engaging experience. The hi-fi system called less attention to itself. Moreover, the liquid textures reduced listening fatigue during long sessions. Altaira created a warmer, more organic presentation with greater richness and texture.

A concomitant effect was to make the presentation more relaxed and less forward; the sound took on a sophisticated refinement that made me lean into the music to a greater degree. Altaira shifted the entire soundstage slightly back, like the difference between sitting in Row D and Row M. Again, I didn't hear this as a reduction in immediacy or palpability, but rather as a relaxed ease. Much of this impression was fostered by Altaira's significant expansion of the soundstage and greater resolution of very low-level spatial information. The soundstage was deeper, wider, and more dimensional. On the spectacular *Arnold Overtures* (Reference Recordings, 176/24), the hall was larger and the impression of instruments surrounded by a large acoustic heightened. Without Altaira, the sound was drier, with less air around image outlines. Try Rutter's Requiem on Reference Recordings to hear how Altaira expands the sense of top-octave air, opening up the soundstage and revealing the size and scale of Meyerson Symphony Center's glorious acoustics.

These impressions were gained by comparing the sound of the system with and without the entire five-hub Altaira system. During the review period, I took delivery of the Göbel Divin Noblesse loudspeakers and a pair of Göbel subwoofers. Installing the new speakers required disconnecting the amplifiers from one Signal Hub and one Ground Hub during the setup. The three other hubs on the front-end components in the back of the room were untouched. After two days of setup without the Altaira system on the amplifiers, I reconnected the two Altaira hubs to the pair of CH Precision M10 amplifiers so that I could hear the effect of Altaira on just the amplifiers. The results were consistent with what I've described above with the full system but to a lesser degree that the comparison between no Altaira and the full five-hub setup. Nonetheless, the addition of the two hubs on the amplifiers resulted in smoother tonal balance and a more expansive soundstage.

CONCLUSION

I'm surprised to discover after all these years that low levels of ground noise on audio components can have such a detrimental effect on sound quality. The only way to appreciate how that noise degrades fidelity is to hear a system with the noise removed. Even more surprising was the manifold aspects of the musical presentation that were improved by lowering the noise floor. I had expected perhaps an increase in soundstage size, blacker backgrounds, and finer resolution of very low-level detail, but I certainly wasn't prepared to hear more liquid timbres, greater timing precision in the bass, enhanced clarity of instrumental lines, or a general impression of higher musical realism and expression.

Shunyata's Altaira system is a revelation, not only taking my system's performance to the next level of sound quality but also revealing the effect of ground noise on musical realism. It has become an essential component of my reference system, and I suspect that if you audition one, you will find it equally indispensable. tas