ALTAIRA USER GUIDE

SHUNYATA RESEARCH

THANK YOU!

Congratulations on your purchase of the Shunyata Research ALTAIRA. Shunyata Research power products are used by many of the finest recording studios, mastering engineers, recording artists and electronics manufacturers worldwide.

Chances are that some of the music you listen to and the equipment that you own was produced using the Shunyata Research products as part of the reference system or mastering system.

Thank you for choosing us to be a part of your system.

Caelin Gabriel
President

IMPORTANT SAFETY INFORMATION

WARNING: POTENTIALLY LETHAL VOLTAGES INSIDE!

THERE ARE NO USER-SERVICEABLE PARTS INSIDE. REFER ALL SERVICE TO SHUNYATA RESEARCH SERVICE DEPARTMENT (or an Authorized Distributor).

To reduce the risk of electric shock do not remove cover or back.
Non-user serviceable parts inside. Refer servicing to qualified service personnel.

WATER

This unit is NOT water proof. DO NOT submerge unit in water or any other fluid. DO NOT operate unit in an environment of water condensation. DO NOT operate unit with standing water on the floor.

CONTACT ENHANCEMENT FLUIDS

Contact fluids, pastes, and gels are NOT recommended for use with this device. Many of these types of products leave a residue that can contaminate or damage the contact metals over a period of time. The products labeled as silver-bearing grease or silver-impregnated silicon are particularly harmful. Some of these are difficult or impossible to remove. Damage caused by these products will void your warranty! Never attempt to clean the contacts inside the outlets. If you wish to clean the external contacts, use CAIG DeoxIT® or DeoxIT® GOLD

CRYOGENIC TREATMENTS & BURN-IN DEVICES

This unit has been treated with KPIP™, a proprietary process developed by Shunyata Research. DO NOT connect this unit to a burn-in device, as doing so will degrade performance and sound quality.

DO NOT cryogenically treat Shunyata Research products. Cryogenic treatment will damage plastic connectors and degrade insulation, shortening the life of the product. CRYOGENIC TREATMENT WILL VOID YOUR WARRANTY.

READ ALL WARNINGS *and* INSTRUCTIONS BEFORE OPERATING THIS UNIT.

UNPACKING

KEEP PACKING MATERIALS
Keep all the packing materials. If you need to ship the unit, you must use the original boxes and protective inserts. Shipping without the original materials will void the warranty and you may not be entitled to claim shipping insurance losses if the unit was improperly packed!

If your packing materials are missing or damaged contact Shunyata Research Customer Service for replacements.

DO NOT plug in the unit until you have read the complete instructions!

INTRODUCTION

Designer Caelin Gabriel created the ALTAIRA to be a state-of-the-art solution for controlling ground-plane noise in stereo, home entertainment, and pro-audio systems.

ALTAIRA is a centralized grounding system that eliminates inter-component ground-loops while reducing ground-plane noise known to cause audible humming, buzzing, and other undesirable distortions. Electrical grounds are often contaminated with various types of electromagnetic interference, including radio, television, microwave, wi-fi and cell tower frequencies. The ALTAIRA System uses patented technologies that significantly reduce these types of noise and distortion.

The ALTAIRA product concept comprises a *system* based on an expandable and scalable hub-type architecture. ALTAIRA hubs, combined with Shunyata Research's purpose-built CGC/SGC ground cables, create a high-performance home entertainment grounding system. A single six-terminal ALTAIRA hub is all that is required for small to medium-sized home entertainment systems. For pro-audio systems, very large home entertainment systems, or more sophisticated, high-end audio systems, a more complex ground system consisting of multiple interconnected ALTAIRA hubs may be installed.

ALTAIRA hubs reduce chassis and signal ground-related noise to a degree that will astonish even the most critical music enthusiast or recording engineer. They strip away multiple layers of noise, revealing previously hidden musical detail and micro-dynamics while improving dynamic scale, tonal accuracy, and timbral definition. More precise and layered imaging, acoustical decay and improved focus provide an expanded and notably more realistic sense of spatial dimensionality. The bass foundation has added weight, grip, and articulation. Video content has improved image resolution, Dmax, and color saturation.

The magnitude of improvement in audio and video performance must be experienced first-hand to be fully appreciated.

FEATURES

PATENTED NIC™ (NOISE ISOLATION) TECHNOLOGY

Shunyata Research's NIC™ (Noise Isolation Chamber) technology reduces RFI, EMI and other types of electrical interference from the ground lines. NIC™ technology uses a ferroelectric crystalline substance that actually absorbs radio frequency noise. It reduces noise without any of the negative effects associated with filter coils, capacitors, ferrite beads, and transformers.

— Patent Number: US 8,658,892 —

SIX CCI™ ISOLATION ZONES

ALTAIRA has **six terminals** fully isolated from each another as individual zones. Each terminal is designed to connect to a single component for best performance. Each zone, and thus each component, is isolated from one another and from earth-ground common-mode noise.

TWO SPECIALIZED GROUND HUB MODELS

There are two models of ALTAIRA hubs available. Each hub has six terminals, each terminal with its own dedicated zone of isolation. The ALTAIRA Chassis Hub model is ideal for simple systems comprised of fewer than six components.

For more complex systems, the ALTAIRA Signal Hub model may be used to segregate and isolate different classes of components. For instance, separating the digital components from the analog components using Signal Model hubs will provide higher levels of performance.

COMPLETELY PASSIVE DESIGN

The ALTAIRA does not require AC power or batteries. It operates without generating heat or noise of *any* kind. **No Hum — No Buzz — No Heat**

PURE COPPER TERMINALS

The ALTAIRA uses the finest pure OFHC copper terminals for best performance.

VIBRATION MANAGEMENT

Mechanical vibration can be very destructive to system performance. The ALTAIRA was designed from its inception to include advanced forms of vibration control that improve the recovery of subtle musical detail and nuance. All chassis panels and internal structures are treated with vibration dampening panels. All internal modules, filters, and electronics are encapsulated in a vibration-absorbent compound.

KPIP™ BURN-IN PROCESS

Each ALTAIRA is treated with Shunyata Research's proprietary Kinetic Phase Inversion Process (KPIP™). The KPIP™ dramatically reduces burn-in time and significantly improves sonic performance.

ALL METAL CONSTRUCTION

No cheap plastic cases here. The ALTAIRA hub is made from solid steel and aluminum, then powder-coated for a durable high-quality finish that will withstand the test of time.

FEATURES

EXPANDABLE NETWORK CAPABLE

The ALTAIRA has a 7th terminal that may be used to make a connection to an earth-ground source. Most Shunyata power distributors provide a chassis ground terminal which makes an excellent method to establish a safe earth-ground connection. The Everest and Denali power distributors' GP-NR system both provide an excellent earth-ground connection point.

The 7th terminal may also be used to interconnect multiple ALTAIRA hubs. *For instance, an ALTAIRA Signal Ground Hub can be connected to an ALTAIRA Chassis Ground Hub.*

SSF-38 STAINLESS STEEL FOOTERS (optional)

Shunyata Research's SSF-38 isolation footers are specifically designed to reduce vibration from the supporting platform. After researching multiple forms of energy dissipation methods, Shunyata Research developed the SSF-38 to provide the performance characteristics of an expensive after market isolator but at a fraction of the cost. (Optionally available at extra cost.)

LIFETIME WARRANTY

It is all too common and easy for a company to make wild marketing claims. The true measure of a company's confidence in their product's performance and reliability is their commitment to stand behind the product. The ALTAIRA is built to deliver reliable and durable performance for a lifetime.

We put it in writing and guarantee it!

THE ROADMAP

While the ALTAIRA ground hub system is simple, the concepts and complexities of a "grounding system" are far from simple. Shunyata Research's research has developed several concepts, procedures, and practices that take grounding systems to higher levels of understanding. This research has made it possible to achieve reliable and repeatable systematic performance improvements to any entertainment system regardless of the system's complexity or cost. We have developed step-by-step procedures, guides, and worksheets that have proven to be effective in ground system design and implementation.

Please download all of the Roadmap guides and worksheets and follow the detailed instructions contained within each. There are instructional videos on Shunyata Research's YouTube channel that explain the guides and worksheets in more detail.

☐ System Profile	☐ Earth-ground Reference Connection
☐ Hub Selection Guide	☐ Cable Worksheet
☐ Component Continuity Tests	☐ Order Hubs & Cables
☐ Hub Location Determination	☐ Installation Procedures

Table 1. All of the documents, guides and worksheets listed above are available to download from the Shunyata Research website.

Reading the Shunyata Research Grounding Concepts Guide is also highly recommended.

1. SYSTEM PROFILE

The System Profile is a visual approximation of a music system. Profile A is a typical system in a single rack with fewer than six components. The system and speakers are located in a small to medium-sized room. The speakers are usually no more 8-10 feet apart.

The System Profile gives the grounding system designer a rough idea of the size and scope of the target system. Profile A and B are relatively simple — a single ALTAIRA hub should work well for these system profiles. Ground cables in standard 1-meter lengths will usually be sufficient for these Profiles. System Profiles C and D are more complex systems which will require more planning, and will likely need more than one ALTAIRA ground hub.

2. HUB SELECTION GUIDE

The Hub Selection Guide helps the designer determine how many hubs may be required for the target system and which model of ALTAIRA hubs may be needed. There are two different ALTAIRA models. The first is a Chassis Hub model, which is used for systems that require only a single ground hub. The second model type is the ALTAIRA Signal Hub, which is used in multi-hub systems and segmented grounding systems. Segmented grounding systems group certain types of components into specific domains, and isolate them onto dedicated ground hubs. For instance, all the digital components may be connected to a Signal Hub, while all the analog components may be connected to a different Chassis Hub.

3. COMPONENT CONTINUITY TESTS

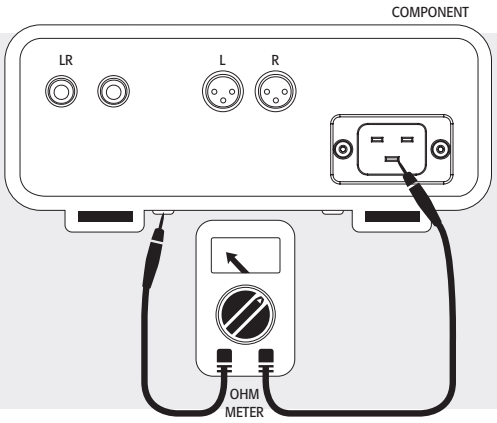
Please read the GROUNDING CONCEPTS GUIDE as a prerequisite to fully understand this topic.

Some components have dedicated ground terminals, which makes it very easy to connect an ALTAIRA hub. However, many components do not have a dedicated ground terminal. An alternative method must be used to ground these components. One method is to use one of the component's chassis screws as a ground connection point. Another method would be to connect a ground cable to an unused signal connector (e.g., an RCA barrel connector or a USB port). A simple ohm meter is all that is required to perform the tests of the types of connections that can be safely used. The results of the tests will help identify which components can be grounded (some can't) and help determine which method is best for each component.

Test Procedure: Chassis Ground Continuity

1. Place one ohm meter lead on the AC inlet ground pin.
2. Place the other lead on a metal chassis screw.

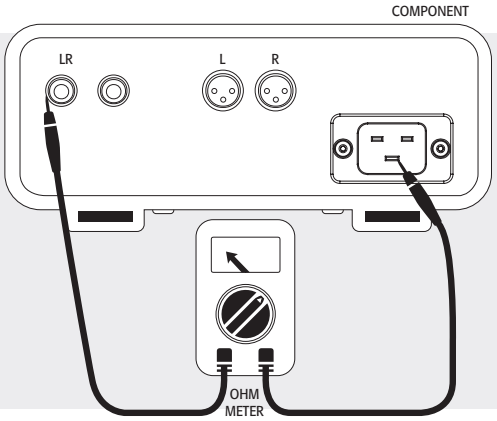
Result: If the ohm meter reads less than 1 ohm that means that the chassis is connected to the earth-ground and that the chassis screw can be used a connection point to ground the component.



Test Procedure: Signal Connector Ground Continuity

1) Place one ohm meter lead on the AC inlet ground pin.
2) Place the other lead on the barrel of an RCA connector or in the ground pin of an XLR connector.

Result: If the ohm meter reads less than 1 ohm that means that the chassis is connected to the earth-ground and that the chassis screw can be used a connection point to ground the component.



4. HUB LOCATION DETERMINATION

Deciding where to place the hub(s) is very important because it will determine the length of the ground cables that connect the ALTAIRA hub to each of the components. Placing the ALTAIRA hub near to or on top of the preamplifier or integrated amplifier are usually the best locations because these components are typically centrally located in the system. This helps minimize the ground cable lengths that will be required. (*Do not place the ALTAIRA on top of tube-based equipment or equipment that is excessively hot or in a location where the ALTAIRA would block proper ventilation.)*

5. EARTH-GROUND REFERENCE CONNECTION

The ALTAIRA does not require an earth-ground connection to operate or to have a positive impact on system performance. However, performance is dramatically improved when the ALTAIRA is properly connected to an earth-ground reference. *There are two primary ways to connect to earth-ground:*

1) If your power conditioner has a dedicated ground terminal, this would be the preferred method. Most Shunyata Research power conditioners feature one or more dedicated ground terminals.

2) If your power distributor doesn't have a ground terminal, or you don't use a power conditioner, the best method is to acquire the earth-ground connection from the AC wall socket's ground wire. Shunyata Research has an AC socket ground adapter specially-designed for this purpose. It safely taps the ground wire in the electrical socket, allowing a standard ground wire to be connected.

6. CABLE WORKSHEET

You CANNOT order an ALTAIRA or the associated ground cable unless you have a properly configured CABLE WORKSHEET

The ALTAIRA CABLE WORKSHEET is a critical part of the design and planning necessary to installing a grounding system. There is one cable worksheet for each ALTAIRA ground hub in the system. The worksheet defines each component that will be connected to that hub. It also lists the specific model, length, and termination of the ground cable that will be used for the system.

7. ORDER HUBS & CABLES

Once the CABLE WORKSHEETS are complete, it is time to order your ALTAIRA ground hubs and all the ground cables required for the installation. Be sure to keep all of your worksheets for future use, especially the CABLE WORKSHEETS, so that the installation goes smoothly once the products have arrived.

8. INSTALLATION PROCEDURES

Once all the products have arrived, be sure to inventory the hubs and cables to be sure that the cables are the correct length and all the terminations are correct. It is then simply a matter of connecting each component in the system to the ALTAIRA hub designated by the CABLE WORKSHEETS using the corresponding ground cables.

INTERCONNECT ALL ALTAIRA HUBS

This is accomplished simply by connecting the first or main ALTAIRA hub to the next one via each hub's 7th terminal. Multiple hubs can be connected by daisy-chaining the hubs. Or, you can can connect each individual hub via its 7th terminal to an earth-ground connection such as an Everest or Denali power distributors ground terminals.

ALTAIRA CG-NR		ALTAIRA SG-NR	
Power Requirements	None	**Power Requirements**	None
Number of Ports	Six (6) ports	**Number of Ports**	Six (6) ports
Isolation Zones	Six (6) zones	**Isolation Zones**	Six (6) zones
Noise Reduction	6-12 dB @ 3 kHz — 30 MHz	**Noise Reduction**	6-12 dB @ 3 kHz — 30 MHz
Vibration Control	Isolation polymer footer	**Earth Ground Isolation**	>6db @ 50kHz-30MHz
Construction	Aluminum and steel chassis Machined aluminum faceplate	**Vibration Control**	Isolation polymer footer
		Construction	Aluminum and steel chassis Machined aluminum faceplate

Dimensions	Width: 14.1 inches (35.814 cm) Height: 3.4 inches, chassis with feet (8.636 cm) Total Depth: 6.9 inches (17.526 cm), faceplate to end of ground terminals Depth: 5.6 inches (14.224 cm), faceplate to back of chassis

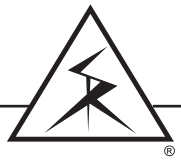
GROUNDING CABLES

CGC/SGC Base Cable
Venom, Delta, Alpha, Sigma, Omega
Available Terminations: STIS v3 interchangeable, Banana & Spade

Ground Cable Tails
VTX™ and VTX-Ag™
Available Terminations: RCA, S/PDIF, XLR-F, XLR-M, USB-A, USB-B, BNC, Spade, Banana, Ethernet

NO HUM — NO BUZZ — NO HEAT

The ALTAIRA uses **NIC™ (Noise Isolation Chamber) technology**. NICs™ use a non-reactive ferroelectric substance that actually absorbs high-frequency noise. This reduces ground-plane noise without any of the negatives associated with conventional filters, capacitors and transformers.
— Patent Number: US 8,658,892 —



SHUNYATA RESEARCH

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