USER GUIDE

ALTAIRA-X

Noise Reduction & Grounding Hub

SHUNYATA RESEARCH

THANK YOU!

Congratulations on your purchase of the Shunyata Research Altaira-X. Shunyata Research grounding 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

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

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

Do not make a ground connection to the positive or negative terminal of a speaker or amplifier.

Ground Tail Adapters are specially constructed so that ONLY the grounds are interconnected. NO signals or signal wires are connected together. Under no circumstances should customers use any standard analog or digital interconnect cables to ground components to Altaira-X.

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 v2™, 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.

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 developed Altaira-X as the most advanced solution to date for controlling ground-plane noise in stereo, home entertainment, and professional audio systems. The Altaira-X functions as a centralized grounding system, eliminating inter-component ground loops while dramatically reducing ground-plane noise — often responsible for audible hum, buzz, and subtle distortions.

Electrical grounds are frequently contaminated by high-frequency interference from sources like radio, television, microwaves, Wi-Fi, and cellular networks. Altaira-X combats these intrusions using patented technologies that significantly lower noise and distortion throughout the system.

Built on a scalable hub-based architecture, Altaira-X can be tailored to systems of nearly any size. A single eight-terminal hub is ideal for small to medium home systems, while larger or more complex installations can benefit from multiple interconnected hubs. When paired with Shunyata Research's purpose-built ground cables, Altaira-X establishes a reference-level grounding system.

By reducing both chassis and signal-ground noise to unprecedented levels, Altaira-X reveals previously obscured musical detail, low-level dynamics, and spatial information. Listeners will experience greater tonal accuracy, enhanced imaging, and a more dimensional soundstage. Bass gains in weight, control, and articulation, while video systems benefit from increased resolution, contrast (Dmax), and color saturation.

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

FEATURES

COMPLETELY PASSIVE DESIGN
The Altaira-X does not require AC power or batteries. It operates without generating heat or noise of any kind. *No Hum – No Buzz – No Heat*

EIGHT INDIVIDUALLY FILTERED TERMINALS
Altaira-X has eight terminals, each independently filtered and functionally equivalent to having eight Altaira SG hubs combined into a single chassis. For best performance, every terminal should connect to a single component. This configuration prevents noise from one component or zone from affecting others, effectively blocking the spread of ground-plane and common-mode noise across the system.

NIC™ NOISE REDUCTION
The Altaira-X 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 ~

TAPc
The Altaira-X features our all-new patent-pending TAPc technology. TAP (transverse axial polarizer) is a patent-pending technology that Shunyata Research developed to improve the performance of its reference signal cables. The TAPc technology is a radical advancement of the TAP technology that enables a significant reduction in the size of the modules — and for the first time allows this technology to be applied to power and grounding products. The sonic benefits of TAPc are profound, delivering a cavernous drop in perceived noise floor, effortless dynamics, and exceptional timing and coherency. TAPc offers a unique and unmistakable improvement that is immediately apparent — even to an untrained ear — repeatable across a variety of systems and components. In essence, TAPc modules act as force multipliers, elevating the listening experience to a level many would not have thought possible.

PLATINUM PLATED PURE COPPER TERMINALS
The Altaira-X uses the finest pure OFHC copper terminals for best performance. These terminals receive a thick platinum plating which delivers exceptional fidelity and tonal purity, offering a stunning natural presentation that complements the heightened resolution of Altaira-X. Fine detail is revealed without harshness, while clarity, contrast, and dimensionality are preserved.

KPIP v2™
Shunyata Research's KPIP v2™ technology is a proprietary preconditioning process that permanently enhances the performance of cables and power distributors. Before leaving the factory, each Altaira-X undergoes four days of this advanced treatment, which dramatically improves sonic clarity while reducing the typical break-in period.

EXPANDABLE NETWORK CAPABLE

The Altaira-X has a green 9th terminal that is 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 green terminal may also be used to interconnect multiple Shunyata grounding hubs. For instance, an Altaira-X can be connected via ground cable to a neighboring Altaira-X or an Altaira CG/SG hub to facilitate grounding more components in larger systems.

STAINLESS STEEL FOOTERS

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.

VIBRATION MANAGEMENT

Mechanical vibration can be very destructive to system performance. The Altaira-X 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.

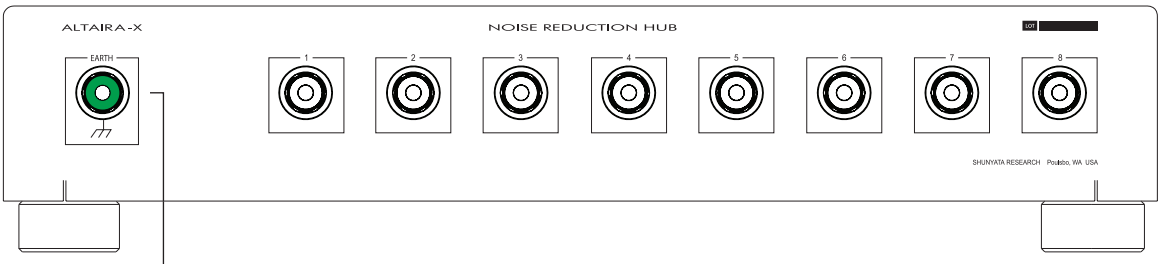
ALL METAL CONSTRUCTION

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

QUICK START GUIDE

MAKE A GROUND CONNECTION

Using a Shunyata Research ground cable, connect the green terminal (earth ground) on the Altaira-X to the dedicated ground terminal on a Shunyata Research power distributor. If your system does not include a Shunyata power distributor, connect the ground cable to a grounded AC wall outlet using Shunyata's AC ground adapter.

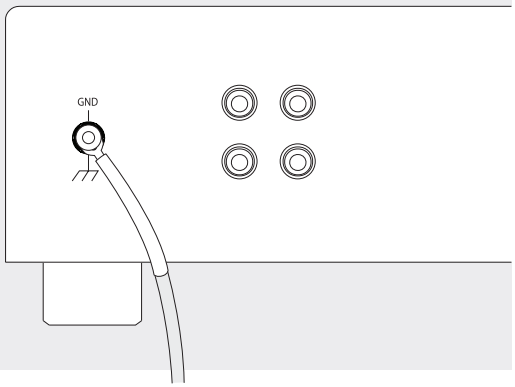


CONNECT A COMPONENT

Use a ground cable to connect your component (we suggest prioritizing the preamp) to one of the eight component terminals on the Altaira-X.

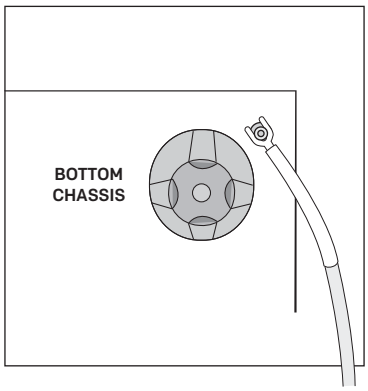
Select a connection point on the component in the following order of preference:

1 **Dedicated grounding post**



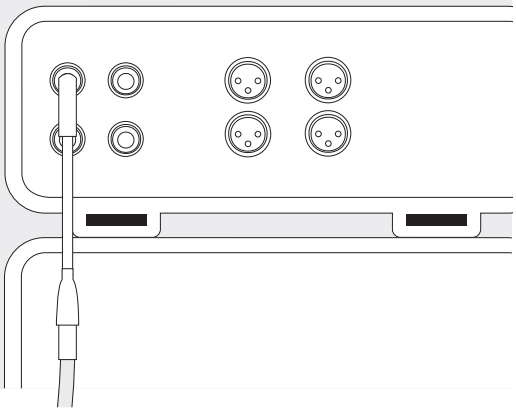
2 **Chassis screw**

Only test and loosen screws around the outer edge of the chassis. Do not remove any screws that may secure internal parts. When in doubt, consult the component's service manual.



3 **Unused signal connection ground** (using Shunyata Research Ground Tail Adaptor)

Ground Tail Adapters are specially constructed so that ONLY the grounds are interconnected. NO signals or signal wires are connected together. Under no circumstances should customers use any standard analog or digital interconnect cables to ground components to Altaira-X.



If no dedicated grounding post is available, use an analog multi-meter to test for continuity (less than 5 ohms, the lower the better) on a chassis screw or unused signal connection point. This process is explained in greater detail in the **Continuity to Ground** section.

TEST/COMPARE

After connecting the first component, take a few minutes to listen and allow the Altaira-X and ground cable to begin settling in. Then, remove all connected ground cables from the Altaira-X (including the ground cable on the green terminal) and listen again. Reconnect the cables and listen once more. A clear improvement with the Altaira-X connected confirms a solid grounding path and provides a reliable baseline as you proceed to connect additional components.

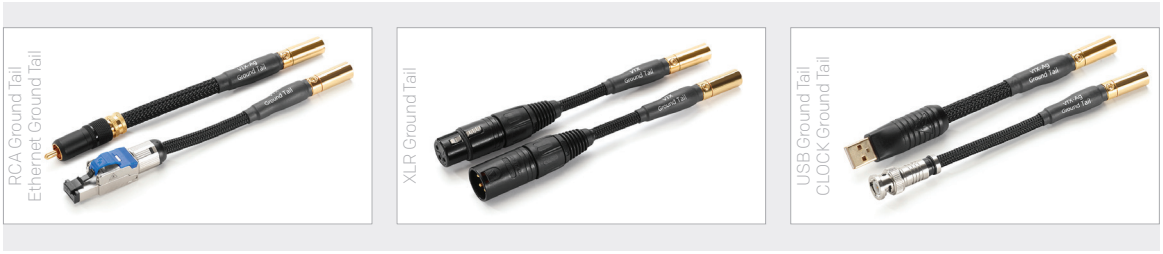
CONNECT MORE COMPONENTS

Continue connecting components to the Altaira-X using the same methods. After each new connection, pause to listen and compare before moving on to the next.

As you begin to enjoy the enhanced resolution and clarity now present in your system, remember that performance will continue to improve over the first 100 to 150 hours as the Altaira-X and ground cables fully settle in. While you listen, explore the rest of this guide for additional insights into system optimization and advanced integration techniques.

CONTINUITY TO GROUND

Some components include dedicated ground lugs, making connection to Altaira-X straightforward. However, many do not — requiring alternative grounding methods. One option is to use a chassis screw as the ground point. If the component has no lug and has no obvious way to utilize a chassis screw, you may access a component's ground through an unused signal connector. Shunyata Research Ground Tail Adaptors make it easy to connect to any unused RCA, XLR, USB, BNC or Ethernet jack.



TESTING FOR CONTINUITY

Continuity tests with a basic analog ohm meter is all you need to know whether these points provide an effective ground connection. Any impedance measurement below 5 ohms indicates a valid grounding connection point.

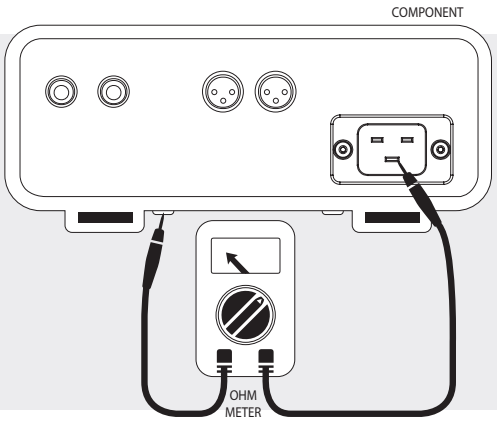
An instructional video on using a multi-meter to check continuity is available at **https://shunyata.com/grounding**

TEST PROCEDURES

Test Procedure: Chassis Ground Continuity

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

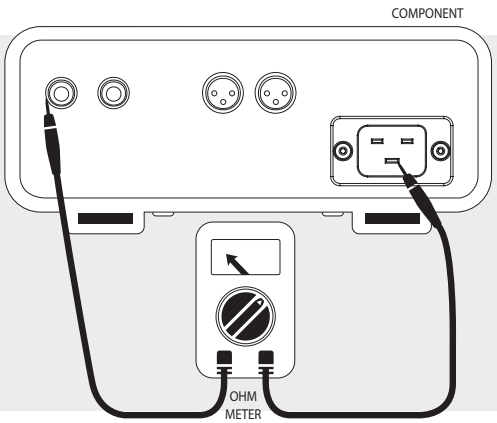
Result: If the ohm meter reads less than 5 ohms, that means that the chassis is connected to the earth-ground and that the chassis screw can be used as a connection point to ground the component.



Test Procedure: Signal Connector Ground Continuity

1) Place one ohm meter lead on the AC inlet ground pin (middle 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 5 ohms, that means that the signal terminal is connected to the earth-ground and that it can be used as a connection point to the ground component.



SYSTEM CONFIGURATION

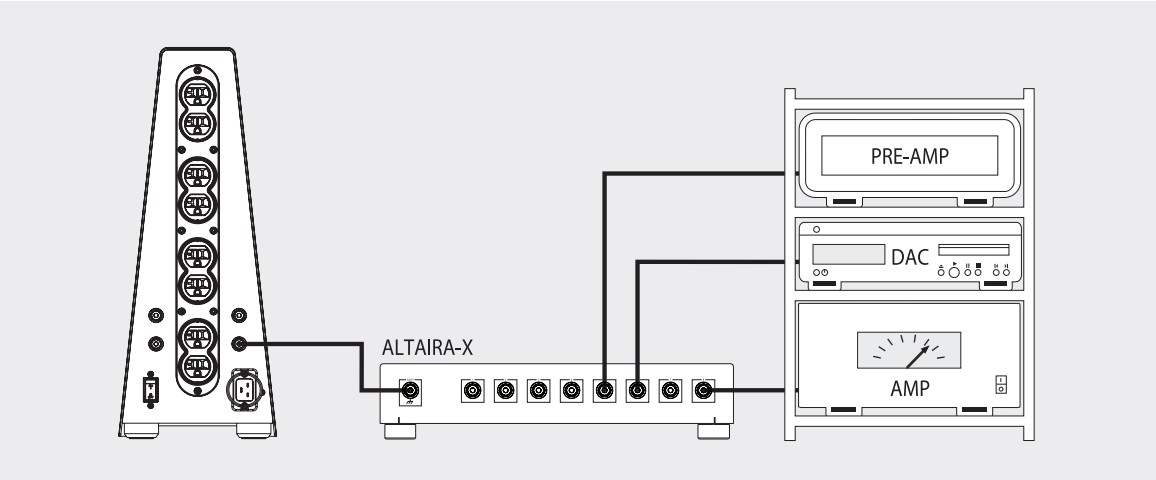
The advanced filtration design of Altaira-X greatly simplifies system configuration. Each terminal post is individually filtered being functionally equivalent to housing eight individual Altaira SG (Segment) Hubs within a single chassis. With Altaira-X, users are free to mix chassis and signal ground connections within the same unit without compromise.

For existing users, upgrading from an Altaira CG or SG hub is seamless. Simply replace the previous unit with the Altaira-X and reconnect your existing ground cables to the same component ground points.

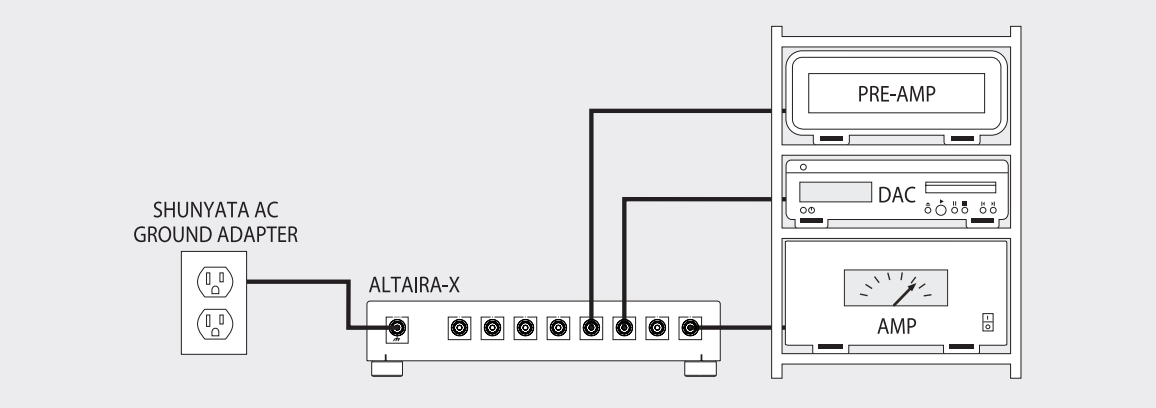
The placement of the Altaira-X has an effect on ground cable lengths. Consider locating it centrally within the audio system, either on or near the preamp.

The following diagrams illustrate common system configurations. For assistance with unique installations, contact your dealer or the Shunyata Research support team.

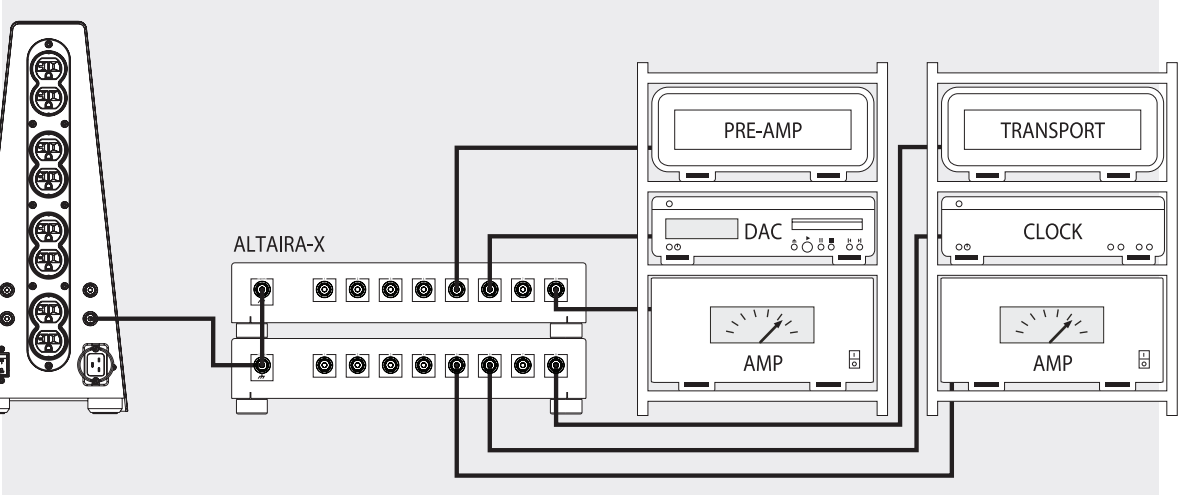
Altaira-X in system with Shunyata Research power distributor



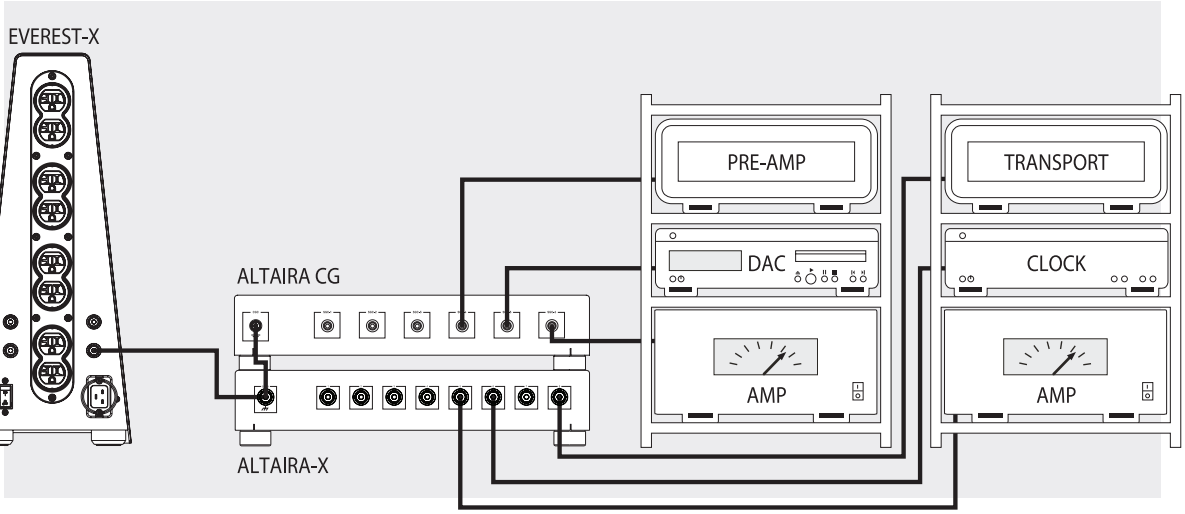
Altaira-X in system without Shunyata Research power distributor



Multiple Altaira-X's in a larger system



Altaira-X in conjunction with and Altaira CG or SG hub



CONNECTION PRIORITIES

While nearly all components benefit from grounding, the preamplifier should be considered the highest priority. As the central control unit in most systems, the preamp handles all signal path connections, making it especially susceptible to noise and interference. Grounding the preamp first typically yields the most immediate and dramatic improvement in clarity, dynamics, and low-level resolution. By reducing ground-plane noise at this crucial stage, overall system performance is elevated, and subsequent component connections can build upon a cleaner foundation.

Connecting additional components can significantly extend the performance gains delivered by Altaira-X. Amplifiers, DACs, streamers, transports, clocks, and network hardware all benefit from reduced ground-plane noise when properly connected. While many components lack a dedicated grounding terminal, analog and digital signal port connections can be made easily using our Ground Tail Adaptors.

SELECTING GROUND CABLES

At a glance, ground cables may seem simple — but their construction, metallurgy, and applied technologies are critical to performance. Shunyata offers six tiers of ground cables, each with progressively lower resistance and higher performance. Reference-level models include TAPc and CMode modules, proprietary filters that strip away EMI/RFI to reveal layers of low-level detail and spatial nuance.

In response to the expanded capabilities of Altaira-X, Shunyata developed the 'X' Cable. Together, Altaira-X and the 'X' Cable form an optimized system for peak performance in ground-plane noise reduction. When selecting ground cables, prioritize using the highest-quality cable between the green earth terminal and the power distributor (or AC wall adaptor).

Do not make a ground connection to the positive or negative terminal of a speaker or an amplifier.

GROUNDING CONCEPTS

Grounding can be a confusing subject, with terms like earth ground, chassis ground, safety ground, signal ground, mains panel ground, ground rods, neutral ground, power supply ground, ground loops and more. Rather than explore all possible technical distinctions, this section offers a simplified overview to help non-technical readers understand the fundamentals. While not required for setting up Altaira-X, the information here provides helpful context for understanding the principles behind system grounding.

HISTORICAL GROUNDING PRACTICES

Many of the best practices used in audio have come from the early days of the telecommunications industry. It was common practice to mount equipment in a metal rack. The equipment in the rack would be connected to a common grounding lug or terminal using braided ground conductors. Every electronic device had a dedicated grounding lug for this ground connection. This practice continues today in both the telecommunication and networking industries. Components of the era were commonly equipped with single-ended RCA jacks that are quite susceptible to ground currents which could result in audible hum and buzz. Connecting all equipment to a central ground point ensured electrical safety and eliminated voltage differences between component chassis that caused the ground loop problems.

With the advent of modern day, mass-market consumer audio products and plastic chassis, many components no longer include a ground terminal. The most common exceptions are turntables and phono preamplifiers where ground terminals are required to prevent hum. Of course, turntables and phono-preamps are legacy components that have survived from an earlier generation of audio systems.

Although many components are no longer equipped with a dedicated chassis ground terminal, it is still advantageous to ground all of your equipment to a common grounding system. This reduces ground loop currents and the associated hum and noise problems. An external grounding system improves overall audio and video performance even if there are no obvious ground loops or hum.

EARTH-GROUND SYSTEM

The earth-ground system begins at the ground rod and includes the electrical panel grounds, in-wall AC ground wiring, socket or outlet ground pins, power cord ground wires and finally the metal chassis of each of the appliances or electronic device plugged into the AC power circuits.

ELECTRICAL SAFETY GROUND

There are three conductors in modern household AC circuits: the line, the neutral and the safety ground. The safety ground wire provides an unbroken pathway from the appliance or electronic device through the in-wall wiring to the electrical panel's ground buss. Safety grounds primarily serve to prevent electrocution and electrical fire.

CHASSIS GROUNDING

Even in high-end systems, noise on safety grounds and component chassis can significantly degrade performance. Long in-wall runs, power cords, and the chassis themselves often act as antennas, picking up radio frequency and electrical interference from sources like Wi-Fi, cell towers, and household electronics. Although many assume "ground" means zero noise, in reality, power supply and chassis grounds always carry some measurable noise. A power analyzer or oscilloscope can easily reveal the extent of this contamination.

The chassis ground refers to the metal enclosure of a component, which is connected to the ground pin of the AC inlet via an internal wire. This connection — required by NEC electrical code — extends the safety ground to the chassis, protecting users in the event of an internal fault. For example, if a live wire were to come loose and touch the metal case, the safety ground diverts current back to the panel, tripping the breaker and preventing electrocution or fire.

SIGNAL GROUND

Every audio component creates its own noise in its power supply and circuitry. Designers shunt this noise to the power-supply ground to keep it out of the signal path, but that practice also pollutes the ground plane with random RF energy and harmonic distortion. When multiple components are linked by RCA, XLR, USB, Ethernet, and other cables, this contamination can travel through their shared signal grounds, subtly raising the noise floor, smearing transients, and reducing resolution, even when no obvious hum or hiss is present. A well-designed grounding system, such as Altaira-X, lowers that baseline noise, clarifies dynamics, and restores fine detail.

To understand why grounding is so critical, remember that every component contains many signal grounds. These begin in the power-supply rectifier, continue through PCB traces and internal wiring, and extend outward to every input and output connector. The power supply establishes a "zero-volt" reference (DC or signal ground) that also serves as the return path for all signal currents. Because current flows in both the signal conductor and its ground return, the ground network is literally part of the audio path, and any noise on it directly affects sonic performance.

In most gear the signal ground is tied to the chassis ground, but some designs keep them isolated ("floating"). Either way, signal grounds differ fundamentally from earth or chassis grounds:

Earth/chassis grounds are safety connections and carry no current during normal operation.

Signal grounds always carry return current and are therefore far more sensitive to noise.

Altaira-X's advanced internal architecture provides an unprecedented level of filtration at every terminal, allowing users to freely mix chassis and signal-grounded components within a single unit. No special configuration is needed; each ground terminal automatically maintains the separation necessary to preserve signal purity and minimize inter-component noise transfer.

Power Requirements	None
Number of Terminals	Eight (8) terminals
Isolation Zones	Eight (8) zones
Noise Reduction	6-12dB @ 3kHz-30MHz
Earth-Ground Isolation	>6db @ 50kHz-30MHz
KPIP v2™	4-days

Vibration Control	SSF-38 Stainless Steel Feet
Construction	Aluminum and steel chassis Machined aluminum faceplate
Dimensions	Width: 16 inches (40.64 cm) Depth: 7.5 inches (19.05 cm) Height: 3.92 inches (9.956 cm) Weight: 13.5 lbs (6.12 kg)

GROUND CABLES AND ADAPTERS

Ground Cable Models
Gamma, Theta, Alpha-X, Sigma-X, Omega-X, 'X'

Available Terminations: STIS™ v3 interchangeable, Banana, Spade, Ring Spade

Ground Adaptor Models
Ground Tail: VTX™, 'X'

Ground Multi-Head: VTX™, 'X'

Available Terminations: RCA, S/PDIF, XLR-F, XLR-M, USB-A, USB-B, BNC, Ethernet

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