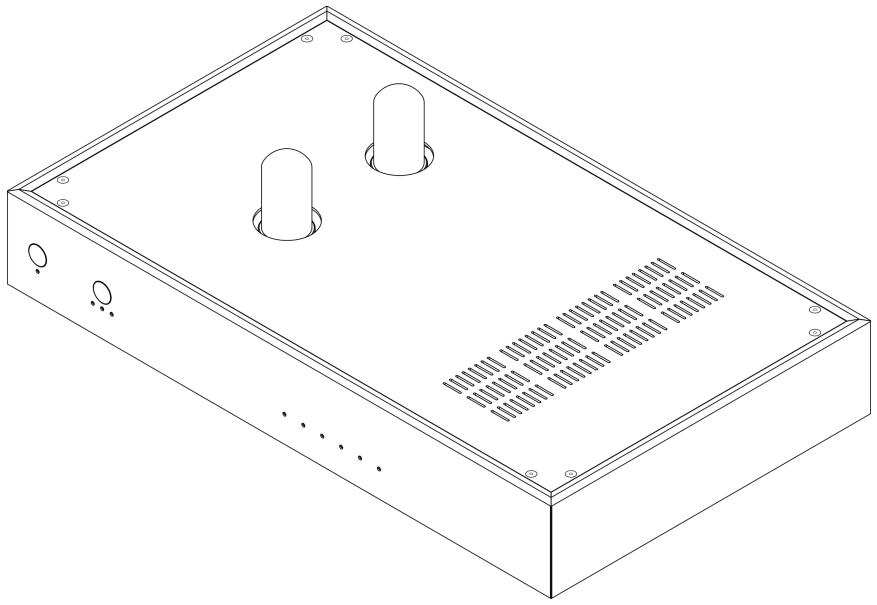


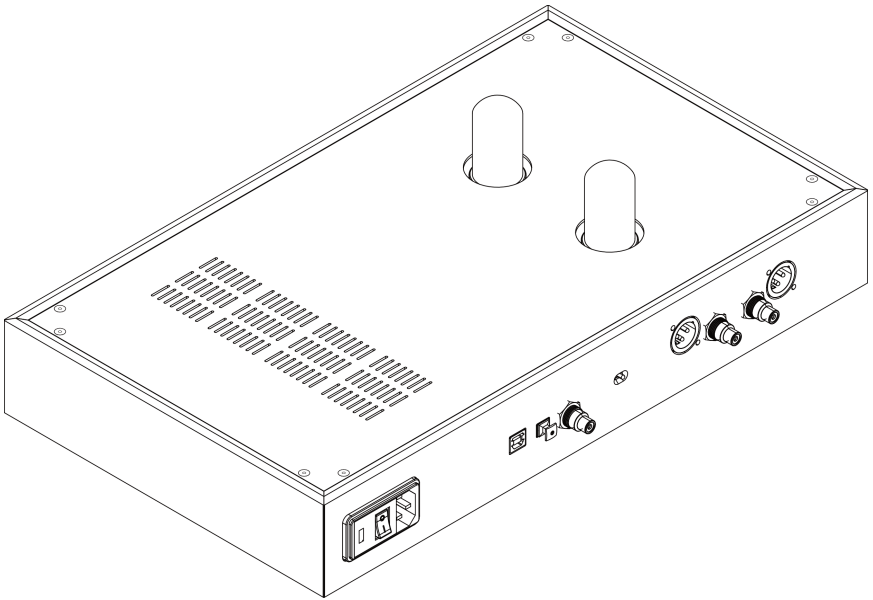
L I N E A

L I N E A R T U B E A U D I O



A E R O

Z O T L D I G I T A L - T O - A N A L O G C O N V E R T E R



USER GUIDE: AERO

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Introduction

The Linear Tube Audio Aero is a non-oversampling, R2R digital-to-analog converter (DAC) utilizing a no-negative-feedback Class A tube output stage and ZOTL (Zero-hysteresis Output Transformer-Less) technology. The Aero employs a powerful ARM processor that seamlessly hands off the data from your source to the DAC. Our uniquely developed, discrete current mirror I/V stage takes full advantage of our chosen R2R DAC's analog-like qualities and transfers a copy of the music signal to our non-inverting, direct-coupled tube output stage. A low-noise linear supply is integrated into the non-magnetic chassis of the Aero which uses a choke-filtered circuit and a high-end Belleson regulator for clean power. Aero then cleverly implements a resonant power conversion scheme derived from David Berning's iconic Pre-One, with individual regulators for each part of the circuit. The Linear Tube Audio Aero is a standout choice for audiophiles seeking high-fidelity audio reproduction with a blend of tube liquidity and solid-state precision. It's "Really good."

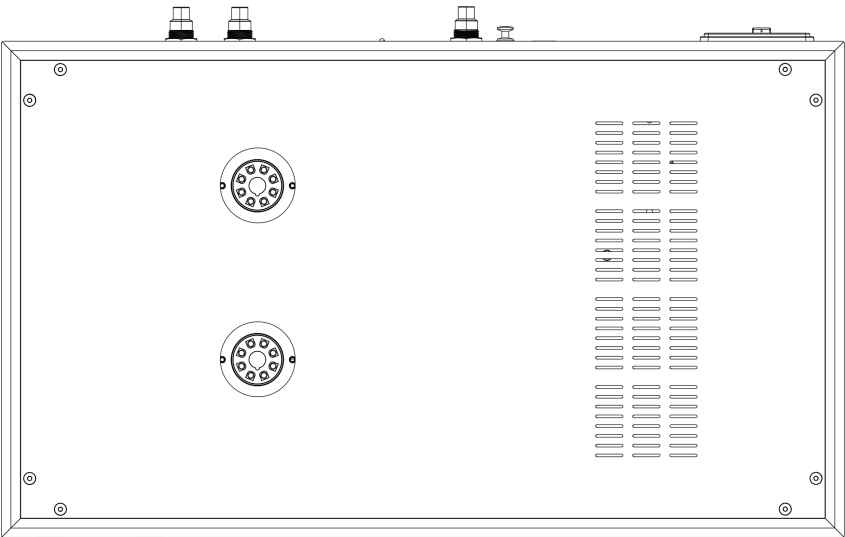


Please review this guide before operating your LTA product.

WARNING: For safety, the cover for this product should be secured at all times.



This digital-to-analog converter contains high voltages and the user should not attempt to service the Aero. Failure to follow these instructions could result in fire, electric shock, or other injury or damage. Furthermore, this device generates radio-frequency energy that can interfere with communications equipment. Place your Aero away from any wireless or frequency-emitting devices such as mobile phones, Wi-Fi routers, and radios to avoid interference.



CAUTION: Use your Aero responsibly.

Avoid moisture and excessively humid environments when the Aero is in use.

Allow for adequate ventilation and never leave anything in direct contact with the exposed vacuum tubes.

Limited Three-Year Warranty

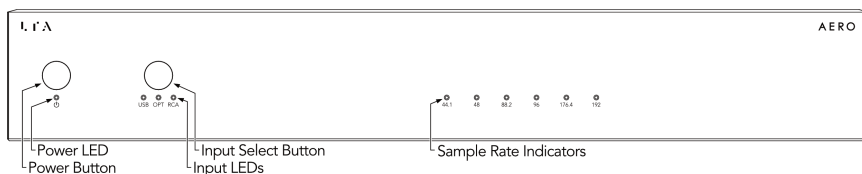
1. Linear Tube Audio (LTA) products are covered by a limited three-year warranty against defects in material and workmanship. Any repairs required will be made at no charge within the first three years after purchase as a new unit. Vacuum tubes provided with new LTA products have a 1-year guarantee.
2. This warranty is transferable to new owners within the original warranty period.
3. To obtain warranty repair service, authorization must be obtained prior to shipping the product to LTA. Contact hifi@lineartubeaudio.com to obtain authorization.
4. LTA will cover shipping costs for warranty repairs for original owners, based in the US, within 60 days of receipt of the product. After 60 days from receipt, shipping costs are the responsibility of the LTA product owner. All shipping costs are the responsibility of subsequent non-original owners and customers outside the United States.
5. This warranty does not apply to damage resulting from: physical abuse, accident or neglect; transport once in possession of purchaser; unauthorized alterations or repairs; tube rolling or adapter use; the use of third-party components.
6. The warranty is void if the serial number has been removed, altered, or defaced.
7. This warranty is void if improper voltage is applied to any input or output.
8. If Linear Tube Audio determines after receiving the unit that damage was misrepresented and has been caused by something not covered by the warranty, the customer must pay for any necessary repairs before the unit is returned to the customer.
9. Linear Tube Audio reserves the right to improve or change its products without obligation to modify previously manufactured units.

Service Note

ZOTL devices use a unique circuit and technicians familiar with other electronics may not know how to properly service LTA products. Please contact us before attempting any alteration or repair, whether you are concerned about the warranty or not.

Specifications

Circuit Type:	Class A
DAC:	Analog Devices AD1865 - Dual 18-Bit
Inputs:	USB 2.0, RCA Coax, Toslink / Optical
Outputs:	2xRCA (70 Ohm), 2xXLR (140 Ohm)
Formats:	PCM (Up to 24-bit / 192 kHz)
Output Voltage:	RCA: 2.2 Vrms XLR: 4.4 Vrms
Noise:	RCA: -110dB at 1.1 Vpeak XLR: -116dB at 2.2 Vpeak
Frequency Response:	-0.5dB: 20Hz - 20kHz
THD+N:	RCA: 0.54% at 1.1 Vpeak. XLR: 0.061% at 2.2 Vpeak
Power consumption:	32-34 watts; 7 watts Standby
Input Voltage:	110/220 Selectable; 100V available
Tube Complement:	(2x) 6SN7/12SN7
Size:	W: 17" (43.18cm), H: 3" (7.62cm), D: 10" (25.4cm)
Weight:	10.5lbs (4.76kg)
Shipping Weight:	14lbs (6.35kg)



Getting Started

Carefully unpack your Aero and ensure all components are present and undamaged. If you find any issues, contact LTA directly.

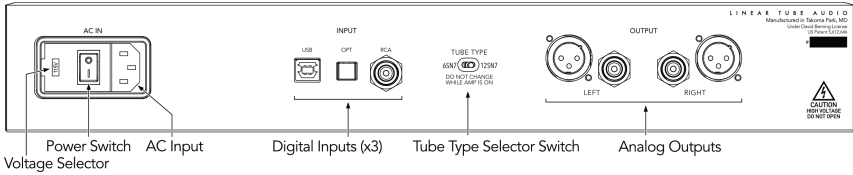
- ▶ Place the Aero on a stable surface and install the tubes. Please refer to the provided Quick Start guide for proper tube installation.
- ▶ Connect the mains power cable to the Aero. Turn on the back rocker switch to enter Standby. You should hear a click from the Aero when power is applied and a 12V LED indicator will be illuminated inside.
- ▶ Connect your digital source to the desired input.

Once your system is set up and everything is hooked up, turn on your Aero via the power button on the front panel. There is a turn-on delay to allow the unit to warm up. The warm up delay is indicated by a slow, subtle strobing effect of the power LED indicator. Once the Aero has completed warm up, the current input will be statically displayed.

Operation

Your Aero is designed to be powered on indefinitely without harm. The front panel power button powers down the DAC but the power supply remains on in a nearly idle state. We recommend using the front power button for normal on/off duties. To turn your Aero completely off, adjust the power switch on the IEC inlet.

While it does not generate much heat, the unit is air cooled and should be placed somewhere with adequate ventilation. Do not touch the tubes after the amplifier has completed warm-up.



Inputs

There are three isolated digital inputs, selectable via the Input button on the front panel.

🔌 USB Audio Class 2.0 (Type B) - 24 bit / 192 kHz

🍏 **macOS:** Aero is plug-and-play with macOS and iOS. Allow your device to connect to the LTA Aero. Select the LTA Aero as the main audio output device in Sound settings.

🐧 **Linux:** Aero is plug-and-play with Linux. Select the LTA Aero as the main audio device in Sound settings.

🪟 **Windows:** Aero will be automatically detected as an audio device and will appear as an Audio Device in Windows. You may need to install or update an ASIO driver for best performance. Please check our website for the latest driver updates.

🔊 S/PDIF Optical (Toslink) - 24 bit / 192 kHz (96 kHz recommended)

🌀 S/PDIF Coaxial (RCA) - 75 ohm - 24 bit / 192 kHz

Outputs

There are two unbalanced RCA and two differential 3-Pin XLR outputs located on the back panel. The XLR pinouts follow the AES14-1992 standard. RCA and XLR outputs can be used simultaneously and are always active.

NO SOUND? Make sure that you have correctly selected Aero as the digital audio output on your source. When plugging Aero into your computer or streamer, Aero may not immediately or automatically be selected.

Tube Heater Voltage Switch Settings

Your Aero comes with selected old-stock 12SN7 tubes as its standard output tubes. By changing the switch on the back panel, your Aero can also use 6SN7 tubes. These have identical electrical characteristics, they simply use different voltages for the heater. When switching from one to the other, be sure to set the switch to the correct position. This operation should only be performed while the Aero is turned off. Failure to select the proper heater voltage will cause your Aero to enter over-current protection mode or present other undesired behavior.

Maintenance

Cleaning: Clean your Aero with a soft, lint-free cloth. Avoid using abrasive cleaners. Do not spray the Aero with water or other liquid cleaning agents.

Tube Replacement/Rolling: The Aero operates the tubes in a manner that maximizes tube life and the tubes are expected to last over five years of regular use. Triode sections are individually auto-biased with error correction using a dc offset null servo.

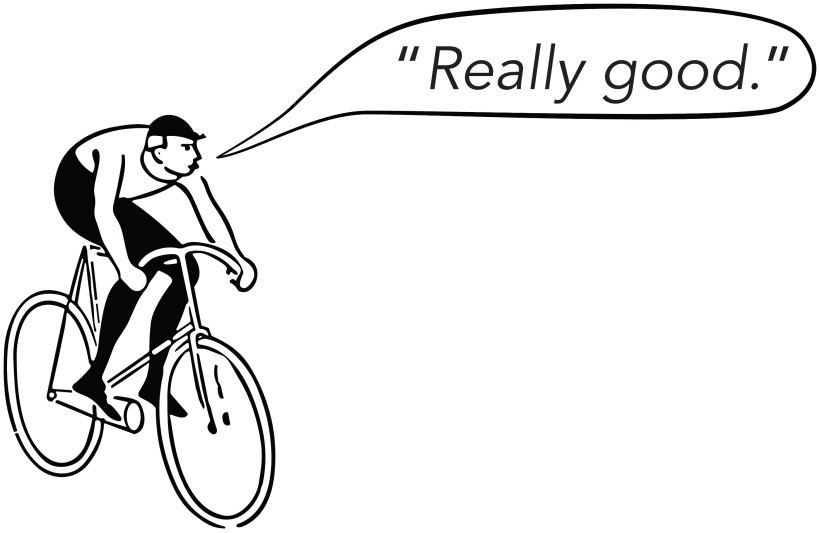
We have heard no reports of any trouble using equivalents of 6SN7 or 12SN7.

When replacing the tubes, tightly matched and balanced pairs are recommended. Allow the tubes to cool down before replacing them. The sockets are tight, so gently rock the tube pins until you are able to remove the tubes. If you are unsure if your desired replacement tubes are compatible, contact technical support.

Troubleshooting: Refer to the FAQ on our website or contact technical support.

For more information and FAQs, please visit
www.lineartubeaudio.com or contact us at
hifi@lineartubeaudio.com.





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