



## Balanced Ultra Desktop Amp

balanced headphone amplifier  
Owner's Manual



Congratulations! Prepare yourself for an audio experience like no other. The Balanced Ultra Desktop Amp (affectionate known as BUDA) brings together the extraordinary advantages of balanced drive with our finest headphone amplifier electronics in a package that's just as comfortable on your desk or nightstand as it is in your reference listening rig. Welcome to world class headphone listening.

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## Balanced Ultra Desktop Front Panel



**1. Headphone Outputs** The Balanced Ultra Desktop amp can drive either one headphone with stereo-XLR balanced connectors or two headphones with single-ended unbalanced 1/4" plugs. You can use either balanced or unbalanced headphones at any time.

**2. Rear Outputs** This switch turns on and off the rear panel, volume controlled, pre-amp outputs which would typically be used as a signal to drive your desktop speaker system. This switch is also used to mute your speakers while you listen to headphones.

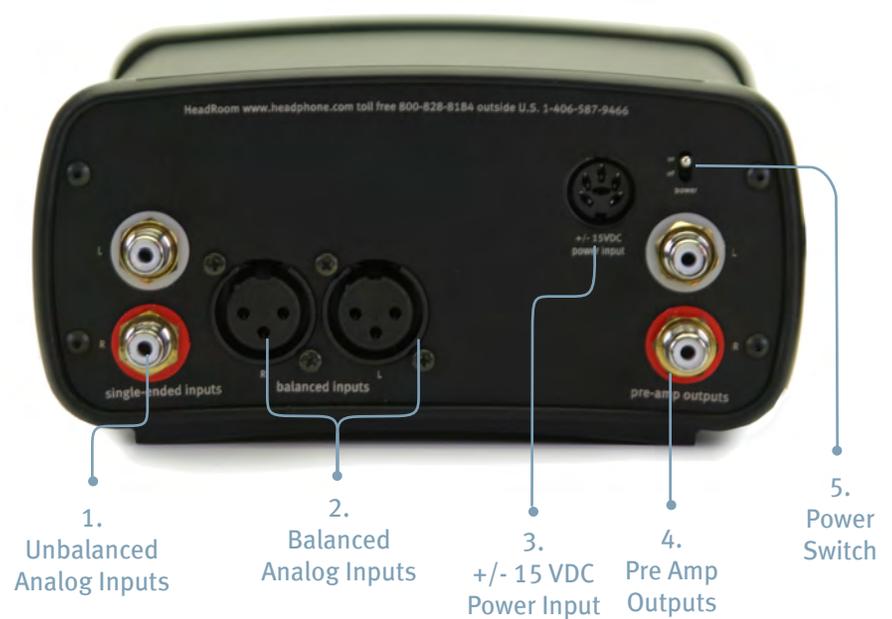
**3. Input Select** This switch selects between the balanced and unbalanced inputs on the rear panel. The unbalanced inputs go through a high-quality phase splitter to create a balanced signal internally. Using the balanced inputs usually provides superior performance.

**4. Crossfeed** This switch engages the crossfeed circuit which provides the natural acoustic crossfeed normally heard at the left and right ear as heard from the left and right speakers. It gives your brain enough normal acoustic information to reduce headphone listening fatigue, and build the stable and natural audio image needed to have a quality listening experience. See page 7 for more info.

**5. Gain** The 3-position Gain Switch accommodates various headphones' power needs. Generally speaking, you should select the gain setting that allows you to get a comfortable listening level between the 10 and 2 o'clock positions on the volume control.

**6. Volume Control** As you turn the volume control knob clockwise the volume increases. You never know where the volume control should be set as different headphones often have widely different impedances and efficiencies, so use your ears to choose your listening level, not the level on the dial. (We recommend you choose a moderate level so as not to blow out your ears.) You also need to turn the amp OFF or ALL THE WAY DOWN before plugging in or unplugging your headphones.

## The Balanced Ultra Desktop Rear Panel



**1. Unbalanced Analog Inputs** One set of RCA connectors are used to connect to an unbalanced source like a CD player, tape deck, or phono-stage. If you are using balanced headphones, this input automatically converts the signal to balanced using an internal phase splitting circuit.

**2. Balanced Analog Inputs** The balanced input accepts a signal from a balanced output source like the Ultra Desktop DAC. For highest performance ensure that the source is truly balanced rather than being single-ended with a phase splitter or transformer coupled output.

**3. +/- 15VDC Power Input** Here is where you plug in the Astrodyne power supply included with the Balanced Desktop. You can upgrade the performance of the BUDA by purchasing a Desktop Power Supply, which would plug in here.

**4. Pre Amp Outputs** These unbalanced outputs are volume controlled and may be used as the input signal for one of our Desktop Power Amps or a pair of self-powered speakers. This output is turned off by the rear output switch on the front panel.

**5. Power Switch** Turn the switch up to turn on your Balanced Ultra Desktop Amp. The green LED will illuminate in the center of the HeadRoom logo in the upper left hand corner on the front of the amp.

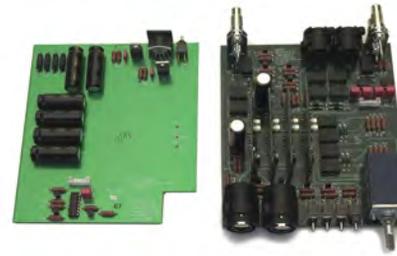
## HeadRoom's 'Max' Electronics Module

At the very core of your Balanced Ultra Desktop Amp are our Max electronics modules. The two critically matched pairs of circuit boards provide the left and right, and normal and inverted channels of this differential-drive balanced headphone amp. Populating each ultra high quality 4-layer board are some of the best metal film resistors and polyphenylene-sulfide caps that money can buy. All active stages are biased into class-A operation; buffer/crossfeed stages are all implemented with the legendary OPA627 op-amp; and the output amplifier is our version of the highly regarded discrete component Diamond Buffer design by Walt Jung.



Four of the Max Modules are used in every Balanced Ultra Desktop Amp.

## BUDA Amp Circuit Boards



BUDA Amps feature a power supply filter board.

The extraordinary build quality would be just more mumbo-jumbo if it didn't mean that each note from the BUDA is precisely held in space, and perfectly black between it and the next. The BUDAs innards fairly bristle with high-quality capacitors of various types hand soldered to a superbly laid-out main circuit board

providing supply decoupling and low crosstalk among the various audio sections. From the silky-smooth Alps RK27 and Neutrik Combo jacks on the front panel, to the Cardas RCA connectors on the rear, to the satin black aluminum and urethane bezels of the enclosure, this amp is built to please now well, and well into the future.



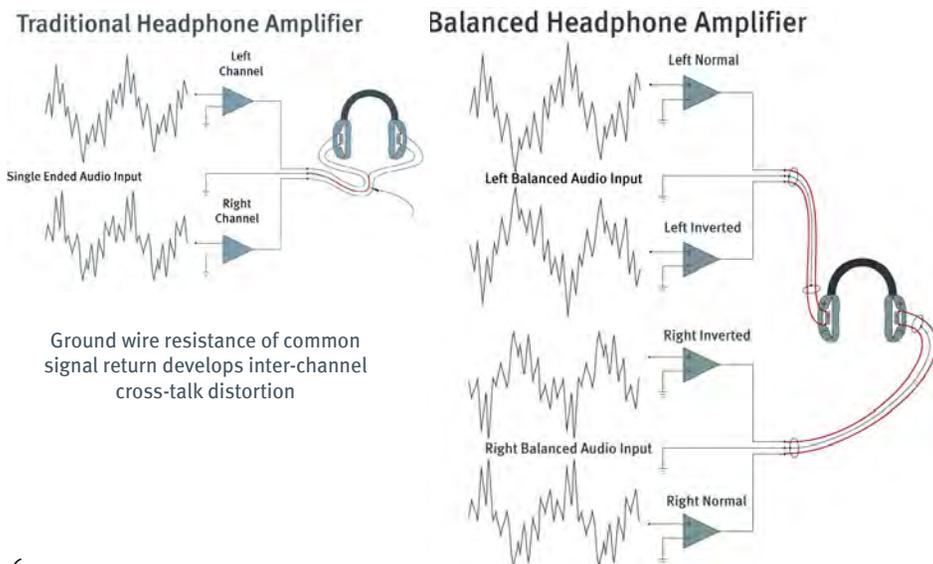
Detail of main board of the BUDA Amp

## About Balanced Headphone Drive

Headphones share a common connection on the non-driven side of the driver elements. You can see this by looking at a headphone plug; the left channel connection is at the tip, the right channel connection is the ring, and the common connection were talking about is the remainder of the plug shaft, called the sleeve. The problem is that the summed left and right channel return current will develop a signal across the series resistance of the common return path, which muddies the stereo presentation on headphones with cross-talk. It is this headphone connector found on all headphones that makes it impossible to drive the return side of the headphone coils with the separate left and right inverted signals of a fully balanced amplifier. HeadRoom has overcome this problem with the Balanced Desktop, Balanced Home, and Balanced Max Headphone Amplifiers, along with Cardas custom headphone cables.

Driving headphones in balanced mode effectively delivers twice the slew rate, half the amplifier output impedance, and rids the headphones of significant cross talk due to the common return connection from the drivers. It really is a whole new headphone listening experience.

For you scientifically inclined folks out there, here's the techspeak about balanced amps: Any time an electrical signal passes through a cable, outside (electrical) noise interference can be induced, even when using shielded cables. In an unbalanced system, both the positive and negative halves of the waveform travel together down the positive and negative signal leads and can be influenced by the outside noise. In a balanced system, the positive and negative halves of the waveform are separate; when these separate halves pickup the same outside electrical noise interference, the noise components on one half are out-of-phase with the noise components on the other half (almost like a mirror image). When the negative and positive halves of the signal are combined in the balanced amplifier, the out-of-phase noise components on the two halves cancel each other out as they are combined, leaving only the original, clean output signal... Translation: superb sound!

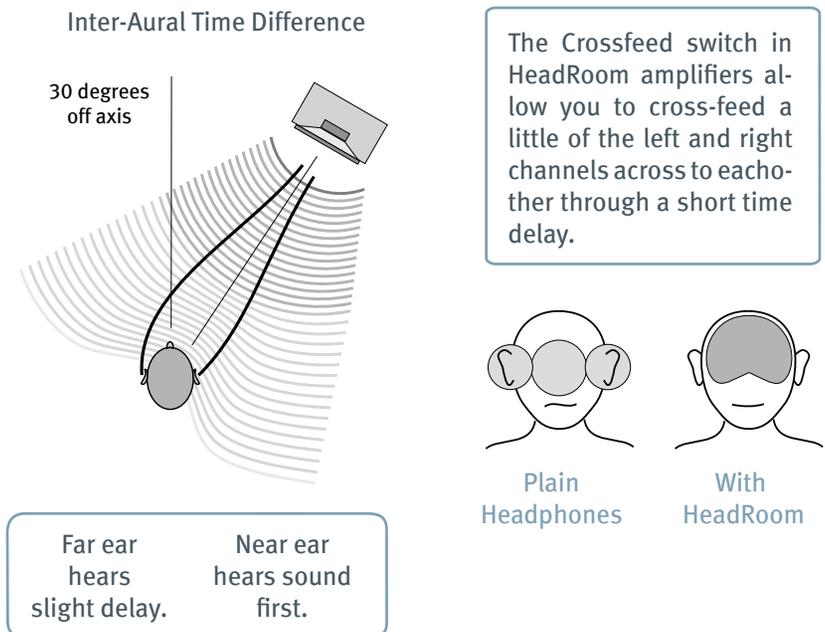


## What is the HeadRoom Crossfeed?

Imagine you are listening to a pair of speakers. If you turn off the left speaker, both ears hear the sound from the right speaker. But because the left ear is slight farther away than the right ear, it hears the speaker's sound slightly after the right ear; about 300 microseconds. This time difference is called the "inter-aural time difference" and it is the main thing your brain listens for in order to tell where to place sound left-to-right.

But in headphones if you turn off the left channel, only the right ear hears the sound. In headphones, if there is any sound that is only in the left channel, or only in the right channel, then only that ear hears the sound. This is not natural, and you brain becomes fatigued trying to figure out where sound is coming from when only one ear is hearing it. This tends to create an audio image that is a blob on the left, blob on the right and a blob in the middle.

HeadRoom amplifiers cure the problem by allowing you to cross-feed a little of the left and right channels across to each other through a short time delay using the processor switch. The usefulness of the circuit varies depending on what type of recording you are listening to; mono and binaural recordings need no processor at all. Old studio recordings that have instruments panned hard left or right, benefit greatly from the processor. Live and classical recordings miked from a distance benefit somewhat less, and can often be listened to without the processor quite comfortably.

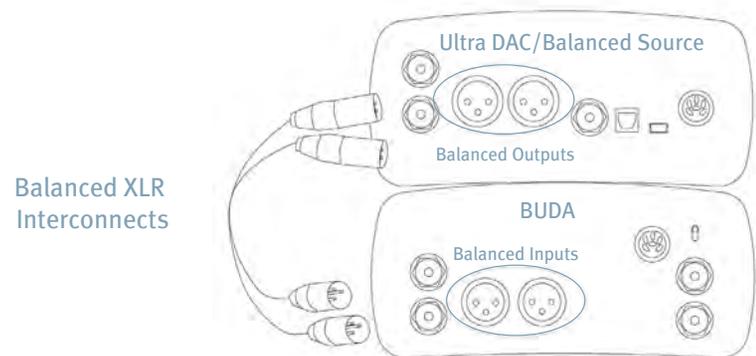


## How to Connect Your Balanced Ultra Desktop

Your Balanced Ultra Desktop headphone amplifier will accept both balanced and unbalanced analog signals from analog sources, and will drive both normally-connected unbalanced headphones, and headphones re-cabled for balanced operation.

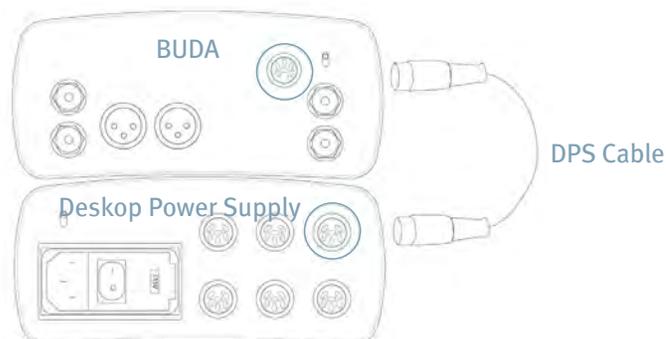
### Using the BUDA with a Balanced Source like the UltraDAC

The UltraDAC is an ideal balanced source for the BUDA with four highly matched digital to analog converters providing a true differential-drive balanced signal. To connect them together, simply stack the UltraDAC on the BUDA and use a pair of balanced XLR terminated cables to connect the balanced outputs of the DAC to the balanced inputs of the amp. Plug your balanced headphones into the Neutrik Combo jacks, and put the input select switch to the balanced position. This set-up procedure will work for any balanced source.



### Using the Desktop Power Supply

While the Astrodyne switching power supply included with your BUDA is surprisingly good, the Desktop Power Supply provides the liquid quick and easy resolution that only an exquisite analog power supply can achieve. Simply stack the BUDA on top of the Desktop Power Supply, and connect the DPS cable from the rear panel power connectors on the DPS to the rear panel power connectors on the amp. (If you're using an Ultra DAC with your BUDA Amp, it can also be connected to the DPS.)

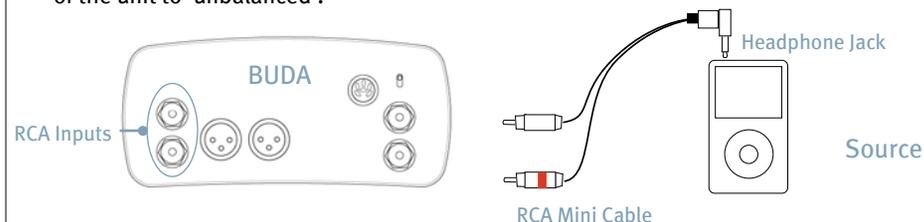


## How to Connect Your Balanced Ultra Desktop

### Connect Your BUDA Unbalanced

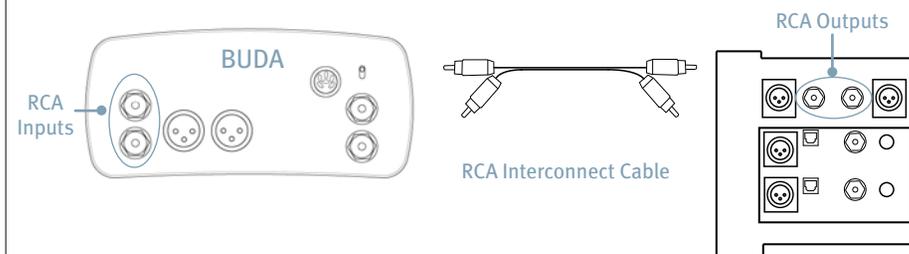
#### #1 To a portable player via Headphone jack or line out.

All hard drive players provide a headphone jack. Connect the headphone jack or line out of your player into the RCA inputs of the BUDA with an RCA to Mini Cable. As always, red or 'R', designates right channel. Switch the input select switch on the front of the unit to 'unbalanced'.



#### #2 To a home CD player or other Analog Sources via RCA outputs

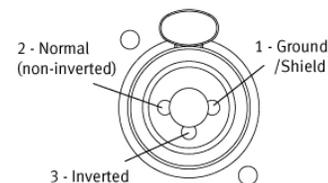
If your source has RCA outputs, use an RCA to RCA interconnect cable to connect the BUDA. Plug the RCA inputs into the back of the BUDA Amp, and connect the other end to the RCA outputs of your analog source. If your source only has a line out output or a headphone jack, then go up to #1. If your CD player has balanced outputs, refer to the previous page.



### About Balanced Headphone Compatibility

HeadRoom balanced amps use two 3-pin female XLR Combo jacks on the front panel. There are a number of different connectors that are being used on balanced headphones; to work with a HeadRoom amp the headphone cable must have two 3-pin male plugs, one each for the left and right channel. Conductors should be wired as shown in the diagram. Of course, a typical 1/4" headphone connector for driving regular headphones in unbalanced mode can also be used with XLR jacks. Visit [headphone.com](http://headphone.com) for more info about balanced headphones.

HeadRoom Balanced Headphone Connection  
(shown looking at front panel jack)



## Balanced Ultra Desktop Amp Warranty

The Balanced Ultra Desktop Amp is warranted for two years. If anytime within the first two years of your purchase you have a problem with your BUDA, you can return it for repairs under the terms of our Warranty. Visit our website for details about warranting your amp, or give us a call at 800.828.8184, and we will trouble shoot the problem, and if necessary authorize a repair.

HeadRoom is the only authorized service center for HeadRoom products, either in or out of warranty. If a unit is under warranty, there is no cost for the repair labor, parts, or shipping from HeadRoom back to you (i.e., You're responsible for paying the shipping charges to get the product to us).

### Out of Warranty Repairs

If you have a HeadRoom amp that is out of warranty, call us at 800.828.8184 ext.104 or email [service@headphone.com](mailto:service@headphone.com) to troubleshoot the problem with our Service Department. Upgrades fees are calculated by labor and parts costs. HeadRoom's non-warranty repair rate is \$100 per hour (billed in 1/2 hour increments) plus parts. If the cost of the repair is over \$100, we will call you with an estimate. Repairs are conducted only on HeadRoom products. When we receive the equipment, we will initiate repairs and upgrades within 1-2 weeks and return the unit to you. You are responsible for shipping costs to and from HeadRoom for all non-warranty repair items.

### Defective Equipment Exchanges

In the uncommon event of receiving a defective product, contact us and we will ship out a replacement product to you at no cost as soon as possible, typically within 3-5 days provided the replacement item is in stock. You will receive the replacement item along with a return shipping label and a card to include with the defective item to return to HeadRoom. Important: Fill in your name and original invoice number of your order on the card and return the item to HeadRoom within 2 weeks. If we have not received the product after 2 weeks (allowing shipping time) we will charge your credit card the amount of the defective item. Please understand that we enforce this policy as an incentive for customers to get defective equipment back to us as soon as possible.

## 30 Day Guaranty

### HeadRoom 30 Day Guaranty

Unless specifically stated otherwise, all HeadRoom purchases come with a 30-day satisfaction guaranty in order to give you the opportunity to evaluate your purchases. We're happy to provide you with the opportunity to refund or exchange your product, but to keep costs down we do have a few conditions. Products must be returned to us within 30 days of the date you receive the product. So make sure you try your purchase out right away! Products must be in "as-new" condition. This means that they're in pristine cosmetic condition, functioning perfectly, and include ALL materials (plastic bags, warranty cards, tie wraps, etc). In other words, please send products back exactly as you received them. If a product is returned within the 30-day return period, but is not in "as-new" condition, we will charge you a 15% restocking fee plus any labor and materials required to return the product to "as-new" condition. Sorry, but after your 30 day trial, products are no longer exchangeable or refundable.

If you're having trouble with a headphone amp or system, please contact us first to troubleshoot the problem. You can email Sales, ([sales@headphone.com](mailto:sales@headphone.com)) or call 800.828.8184. If we can fix it while you've still got the product, everyone's happy!

### Equipment Exchanges

If you would like to exchange your purchase for another item, you have two options. You can simply purchase the item you want, and send the item you don't want back for refund within 30 days of the original purchase (don't forget to fill out the back of the Return & Exchange card and include it with your return). We will refund your credit card after we receive the item. Or, you can send your product back as an exchange, and indicate the product you would like on the Return card. We will adjust your credit card accordingly and ship you the new item. Replacement products are shipped to you as soon as possible, typically within 3-5 days provided the replacement item is in stock.

### Shipping Products back to HeadRoom

Please ship products back in the original shipping box (or another that is comparable); please don't send headphones back in JUST the headphone box, as it's a sure bet that they will no longer be in "as-new" condition when we receive them! We HIGHLY recommend that you ship returns using an insured and "signature required" delivery method—we can't be responsible for lost or damaged packages. Finally, don't forget to include the completed Return & Exchange card and WRITE YOUR NAME on the outside of the box!

Return Products to:  
HeadRoom  
Attn: Returns  
2020 Gilkerson Drive  
Bozeman, MT 59715

Contact Us:  
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## A Word About Your Hearing

People have a natural tendency to listen to music at much louder levels with headphones than they would with speakers. To avoid permanent hearing damage, it's important to be careful not to listen at extremely loud levels (or to listen for too long at moderately loud levels). Because HeadRoom amps need to be able to drive even the most inefficient dynamic headphones to satisfactory listening levels, they are also able to drive headphones of average or higher efficiencies to extremely high levels. As a result, even though the volume control on your HeadRoom amp may appear to be set to a low level, you may not be listening at a safe level. Generally speaking, when listening to headphones you should only turn up the volume to the point at which the sound isn't too quiet.

As a general rule, sound pressure levels under 80 decibels will not damage hearing, even if experienced continually. On the other hand, anything over 100 decibels may cause permanent damage very quickly. Sustained exposure to sound pressure levels anywhere in between can also be damaging—the louder the sound, the shorter the time required to cause permanent damage. Just to drive this message home, here's a bit of information about hearing damage. The most common type of damage caused by prolonged or excessively loud sound is called tinnitus. It manifests itself as a sustained buzzing and/or ringing in the ears, and can become a permanent condition.

If you find that your ears are ringing or that there is a sensation of pressure or fatigue, your body is trying to tell you that your ears need a break. Give them a rest for a few days (or until they feel fresh). If you ignore these symptoms, you're risking permanent hearing damage.

In addition, don't fool yourself into thinking that you either have full-blown tinnitus or you don't have it at all—there are different degrees of hearing damage. For example, you might have a mild case where you only notice ringing in your ears in the quiet of your bedroom at night. However, once you have a slight case of tinnitus, your ears are much more susceptible to further damage. So if you do experience mild symptoms, it's important to be much more careful about your exposure to loud sounds.

Sorry to sound so sobering, but a lifetime of musical enjoyment requires ears in tiptop shape. Now that we've told you to be careful, don't blame us if you blow it. If you have any more questions about hearing damage, call a doctor.

### Contacting HeadRoom

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