



The BitHead & Total BitHead
headphone amplifier
owner's manual



Package Contents

- 1 BitHead/Total BitHead
- 1 mini-to-mini cable
- 1 USB cable
- 3 rubber adhesive feet
- assorted adhesive velcro feet

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Getting to Know Your BitHead Amplifier

Hold the BitHead so the controls are facing you and the rubber battery door is up. Across the front of the Bithead are a number of connections and controls.

1. Headphone Jack 1- On the far left is one of two headphone jacks that fit any 1/8" (mini) headphone plug. (An adapter is needed if your headphones are terminated to a 1/4" plug.)

2. Power Switch- The switch on the left is the power selector. While attached to a computer, having this switch in the left position will power the BitHead entirely from the computer power over the USB; having the switch to the right will switch the DA converter and amplifier stages over to battery power. While attached to a portable player through the line input, power will be "off" with this switch to the left and "on" with the switch to the right.

3. Power LED- To the right of the power switch is the green power LED, which indicates whether the unit is ON (lit) or OFF (unlit).

4. Volume Control- Just to the right of the power LED is the volume control. Rotate the volume control to the left to increase volume, and to the right to decrease volume. If using different pairs of headphones with your AirHead, different headphone efficiencies will most likely mean that the volume level will need to be adjusted to achieve adequate sound levels in the headphones.

5. Clipping Indicator- The clipping indicator flashes when the amp doesn't have enough voltage to drive the headphones. This can happen at peak passages when listening at a fairly loud level and/or with high impedance headphones. It will also flash when the batteries get too low in voltage to drive the headphones. Mainly, when the clipping indicator starts to flash at music peaks, it's time to change the batteries.

6. Crossfeed Switch- To the right of the clipping LED is the HeadRoom Crossfeed switch. Turn the switch to the right to the ON position, and the crossfeed is engaged (for normal stereo headphone listening). In the OFF position, the crossfeed is bypassed (for listening to mono or binaural recordings).

7. Headphone Jack2- On the far right is the second headphone jack. You can connect two headphones to the BitHead at the same time. It's best to use the same type of headphone, as the volumes will be somewhat different unless both headphones are the same efficiency.

The BitHead



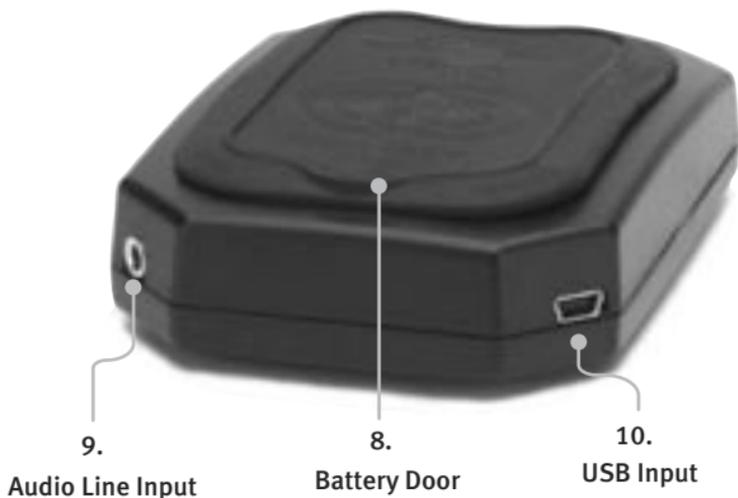
The Back of the BitHead

If you rotate the BitHead 1/2 turn, you'll see the back of the unit, with two additional inputs, one on each corner.

8. Battery Door-On the top of the BitHead is a battery door. To replace your batteries (the BitHead requires 4 AAA cells), gently pull up on the small tab sticking out of the back of the battery door. This will lift the entire rubber door. This exposes the battery compartment; remove the old batteries and insert four new ones. (Always replace all four batteries at once.)

9. Audio Line Input-The jack on the left is the audio input. Inserting a stereo mini-plug into this input will disable the audio from the USB input (if present). The included mini-to-mini cable connects the BitHead to your portable player via this input.

10. USB Input-The jack on the right is the USB input. The BitHead uses a mini-B USB connector, and a short cable for use with laptops is included with your purchase.



How to Mount Your BitHead Amp

Your BitHead has been supplied with a number of different feet. The rubber feet can be stuck to the bottom of the amp if you are simply going to place it on a tabletop. But we like to attach the amp to the various source devices with the enclosed Velcoins. First, remove the hook coins (the scratchy ones with all the miniature hooks) from their adhesive strip and stick them into the three circular foot wells on the bottom of the amp.

Then, clean the surface where you want to mount your BitHead. On portable players we recommend mounting the amp to the bottom side of your portable player with the amp controls facing towards you. In this configuration the rubber door will act as a non-slip foot and the players' controls will tilt slightly towards you for easy access. When used with laptop computers, we recommend sticking the amp on the back of the display with the amp controls about even with the right or left hand side of the display so they can be easily reached. With home computers you can attach the amp to the tower or to the bottom of your desk for easy fingertip access.

Then, remove the loop coins from the strip, and stick them to the hook coin in the feet of the BitHead, adhesive side out. Carefully position the BitHead just above the desired spot, then slowly and firmly push the BitHead against the surface. This should stick the loop Velcoins into proper position. Carefully remove the BitHead leaving the loop coins, and then press each more firmly into place by hand.

Additional Velcoins are available for purchase through our website.



BitHead & Velcoins



attaching the Velcoins



player with Velcoins



BitHead & player
attached



BitHead attached
to desk



BitHead attached
to laptop

How to Hook Up Your Bithead Amp

The BitHead is a portable headphone amplifier that can be used both with a portable music player through the line input, and with a computer or laptop as a USB audio device.

When hooking-up to a portable music player (like a portable CD or MP3 player) simply use the included mini-to-mini cable and connect the line output of the player to the line-in of the BitHead. If no line out is available, use the headphone jack with the volume knob set to $\frac{3}{4}$, or two steps less than full volume on digital players. On home audio equipment, connect the line-in of the BitHead to any line-out using an RCA to stereo mini-plug cable.

When hooking-up to the USB port on a computer simply connect a USB A to mini-B cable between the BitHead and the computer or USB hub. The computer should automatically recognize the BitHead and configure it as the default sound device. You may have to close and reopen currently running media applications in order for them to recognize the audio device change. Apple users may have to go to the computer control panel and select the BitHead as the new sound audio device. In order to get the highest sound quality, you should raise the computers software volume control to full volume and adjust the volume control thumbwheel on the BitHead for the desired listening level in your headphones. The BitHead can also act as a very good, but simple sound card by connecting its headphone jack to your desktop speaker system's line-in.

Lastly, (it seems kind of obvious) plug your headphones into either of the two headphone jacks on the BitHead. If your headphones are terminated to a large $\frac{1}{4}$ " headphone plug, the $\frac{1}{4}$ " plug may detach to reveal an $\frac{1}{8}$ " plug underneath. If not, you'll need a $\frac{1}{4}$ "-to- $\frac{1}{8}$ " adapter plug. HeadRoom sells these adapters if you need to purchase one, visit headphone.com for more information.



mini-mini & USB cables



BitHead, mini cable,
player



BitHead, USB cable,
laptop



BitHead with Etymotics

Frequently Asked Questions

Q. What's the difference between the regular and Total models, in terms of parts and in terms of sound quality?

A. The Total BitHead uses higher quality resistors and capacitors in the audio signal path. See headphone.com for more details.

Q. Does the BitHead require software?

A. No the BitHead does not require any software.

Q. Does the BitHead support 24 bit audio?

A. While the computer application you are using may be able to read and play files with various different sampling rates and word widths successfully on the BitHead, the BitHead itself uses a good 16-bit DA converter.

Q. Can I upgrade my BitHead to a Total BitHead, or change my BitHead into a AirHead?

A. No. If you purchase an BitHead and would like to exchange it for a Total BitHead, AirHead, or Total AirHead within the first 30 days of your purchase, you can exchange it for a full credit towards the other unit.

Q. Why is the volume control scratchy when I turn it?

A. Because we had to make an engineering compromise in order to get the best sound quality. We could suppress the noise, but only by putting capacitors in the signal path around the volume control to block the DC offsets. The problem is, capacitors in the signal path would degrade the audio somewhat. We figure it's better to have a little pot noise when you adjust the volume, and better audio purity while you listen.

Q. Can I use the line-in and USB at the same time?

A. No. While the BitHead may be powered from the USB connector, connecting an input to the line-in disconnects the audio from the DA converter of the USB section.

Q. Will I damage my amp or headphones if I plug them in with the volume up?

A. Yes, possibly! The BitHead is a miniature power amp, and is quite capable of blowing its miniature self up if it has to drive the short circuit of not-fully-inserted headphones. Please be careful to have the unit off, or the volume fully down, and see that the plug is fully inserted when connecting headphones to the amp.

Q. Does it matter what kind of soundcard I have?

A. No. Successfully connecting the BitHead completely bypasses your computer's other sound devices.

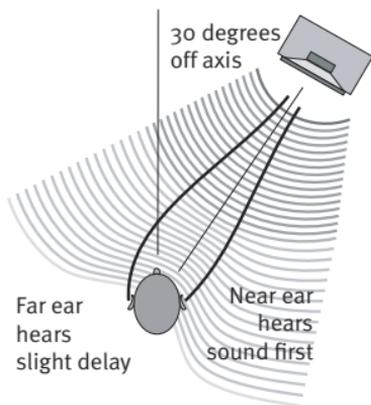
Q. Can the unit drain the batteries even when it's turned off?

A. It will not drain your batteries, but if you are storing the unit for a period of time, it is a good idea to remove the batteries to prevent accidental leakage.

Q. How long do the batteries last on my BitHead?

A. The BitHead and Total BitHead can be powered for 40+ hours on 4 AAA batteries.

What does the HeadRoom Crossfeed Do?



Plain Headphones



With HeadRoom



The crossfeed switch in HeadRoom amplifiers allow you to cross-feed a little of the left and right channels across to each other through a short time delay.

Imagine you are listening to a pair of speakers and you turn off the left speaker, both ears continue to hear the sound from the right speaker. But because the left ear is slightly farther away than the right, it hears the sound slightly after the right ear. This time difference is called the “inter-aural time difference” and it is the main thing your brain listens to for left-to-right sound imaging.

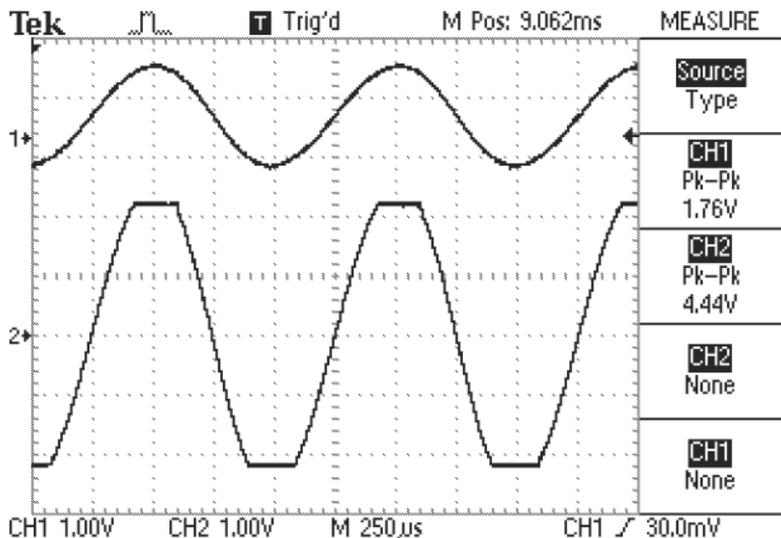
But in headphones if you turn off the left channel, only the right ear hears the sound. In headphones, if there is any sound that is only in the left channel, or only in the right channel, then only that ear hears the sound. This is not natural, and your brain becomes fatigued trying to figure out where sound is coming from. This problem with headphones tends to create an audio image that is three blobs, left, right, and center.

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

What does the Clipping Indicator Do?

Next is the clipping indicator, a frosted red LED that lights up every time the amp clips. “Clipping” is what happens when the signal tries to get bigger than the power supply voltage, which it can’t, and the peaks in the signal get “clipped” off. The result is a miserable crackling sound.

But in the case of the BitHead, the clipping indicator not only tells you when you’ve got a hot signal, it also tells you when your batteries are low. Because we’re using some of those new multi-voltage “rail-to-rail” interated circuit chips, the BitHead will run on a wide range of voltages. And because “normal listening level” will vary widely due to the varying impedances of headphones on the market, we can’t really estimate how long the BitHead “should” run on a set of batteries. (The battery voltage may lower to clipping after 20 hours of use with a difficult-to-drive pair of AKGs, but you might get 60 or more hours of use at a comfortable listening level when driving a pair of efficient Grados.) We realized that a clipping indicator on the ever-diminishing voltage of a set of batteries would be the best low battery indicator of all. For a given volume level at your headphones, the battery voltage will eventually get lower than the signal, and the clipping indicator will start to blink with the louder bits of the music. If the clipping indicator starts blinking more and more at your normal listening volume, it’s a sign that your batteries are on their way out and need to be changed soon.



An example of the input signal, and the output signal clipping

HeadRoom Product Guaranty & Warranty

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) or call 800.828.8184. If we can fix it while you've still got the product, everyone's happy!

HeadRoom Manufactured Products under warranty:

The HeadRoom BitHead and Total BitHead amps are warrantied for two years. If anytime within the first two years of your purchase you have a problem with your BitHead or Total BitHead, you can return it for repairs under the terms of our 30 Day Guaranty.

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 & Upgrades

Non warranty repairs are assessed at an hourly rate of \$50 per hour plus parts, and are only conducted on HeadRoom products. If the cost of the repair is over \$100, we will call you with an estimate. If you have an older HeadRoom amp that is out of production, we may not be able to repair the amp, however please contact us and we will let you know if we are able to. Upgrades are typically set on a flat fee calculated by labor and parts costs. When we receive the equipment, we will initiate repairs and upgrades within 1-2 weeks and return the unit to you. The customer pays for shipping to HeadRoom and we pay for return shipping.

Product Exchanges & Shipping

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 this 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.

Defective Equipment Exchanges

In the uncommon event of receiving a defective product, call us right away 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.

Shipping Products back to HeadRoom

Please ship the product 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 this completed card and WRITE YOUR NAME on the outside of the box!

Return Products to:

HeadRoom
2020 Gilkerson Drive
Bozeman, MT
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Contact Us:

www.headphone.com
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Phone: 406-587-9466
Fax: 406-587-9484



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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