



The Portable Micro Amp

headphone amplifier
Owner's Manual

with internal DAC option



Congratulations on your purchase of the HeadRoom Portable Micro Amp! This little gem is a very deliberate blend of audiophile quality parts, a road-worthy aluminum & urethane enclosure, a serious battery and recharging circuit, plus a well-conceived set of travel accessories, all tightly focused on getting you great access to your tunes whether they live on an iPod, laptop, or any other type of portable audio player. Available with or without internal DAC, the Micro Amp is sure to deliver

all your favorite tunes, anywhere; anytime;

Right Between Your Ears.

Toll Free: 800-828-8184
Phone: 406-587-9466
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2020 Gilkerson Drive
Bozeman, MT 59715
www.headphone.com

The Micro Portable Amp



Front Panel Description

1. Line Input Plug your source into the Micro Amp here. In most cases your source will have a line-out or headphone jack, so you will need a mini-mini cable. If you have a digital source, then ideally you're using the Micro DAC and will connect it here via mini-mini cable (see pgs. 8 & 9 for more info on hooking up your Micro Amp).

2. Headphone Out The headphone out is where you plug in your headphones. There isn't room for a full sized jack, but this 1/8" mini-plug will take the small plug of all 1/8" headphone jacks. We also sell a short flexible Grado 1/4"-1/8" adaptor for your big cans; and you can get a replacable Cardas headphone cable with a mini connector for many types of headphones, call us or consult our website for details.

3. Crossfeed Switch This switch engages the crossfeed circuit. The audio image on headphones is often not very good; typically the image is a blob on the left, a blob on the right, and a blob in the middle. The HeadRoom crossfeed provides the natural acoustic cross-feed normally heard at the left and right ear as heard from the left and right speaker. Adding back the normally occurring cross-feed signal gives your brain enough information to build the stable and natural audio image needed to have a quality listening experience. See pg.7 for more info on the HeadRoom crossfeed.

4. Gain Switch The 3-position Gain Switch accommodates various headphones' power needs. For instance, the Low Gain setting would be used for ear canal headphones (which are extremely efficient), allowing a larger range on the volume control pot. Experimenting with your headphones and the Gain Switch will help you to determine which setting you prefer.

5. 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; a general rule of thumb is to adjust the volume only one or two notches above 'sounding too quiet'. It is important to turn the amp OFF or ALL THE WAY DOWN before plugging in or unplugging your headphones to avoid short-circuiting the amp.

6. Power Switch Use this switch to turn your Micro Amp on. The red LED will illuminate in the center of the HeadRoom logo in the upper left hand corner of the amp. There is nothing wrong with leaving your amp 'on' or 'off' for lengthy periods of time; but of course if its 'on' it will drain your batteries when the unit is not plugged in. We recommend that you unplug your amplifier if you're storing it for a long period of time.

The Micro Portable Amp



1.
Power Input

(DAC Option)

2.
Optical/
Coaxial
Digital
Input

3.
USB
Input

4.
Pre-Amp
Output



Included recharging
power supply

Rear Panel Description

1. Power Input Recharge the battery of your Portable Micro Amp by plugging in the charging unit here (use only the included power supply to recharge your amp.) After several hours, your battery should be fully charged and ready to go. You may listen to the amplifier while it's charging, however you may experience slightly compromised sound quality and battery life. We recommend fully charging your amp without listening, so it may accept a complete charge. The battery on your Portable Micro will last anywhere from 15-20 hours (if you're using the DAC on your Portable Micro your battery life will be lower than using only the analog portion of your amp). The lithium-ion batteries in the Portable Micro are good for approximately 300 charges, at which point you will need to send your amp back to HeadRoom so a new battery can be installed. The battery is warranted for one year; if your battery fails after this point we will replace it for a small fee. Please contact us for details.

2. Optical/Coaxial Digital Input (DAC Option Only) The Optical Input is your typical Toslink connector. Since this is a mini connection, you will need adaptors if you have full size optical or coaxial cables, the RCA-Mini Mono Adaptor and the Toslink- Optical Mini Adaptor are available on headphone.com. You get this input signal from the optical output of your player. Not so many portable audio players have optical outputs anymore, but many portable DVD players and some hard disk drive players do. Of course, a coaxial output is available from many pieces of home equipment. See pg. 9 for more hook up information.

3. USB Input (DAC Option Only) The USB input gets its signal from a computer: laptop, desktop, or Ultra-Mobile PC; PC, Mac, or Unix. Most computers will instantly recognize the Micro DAC upon plugging it in, but occasionally some users may need to go into the audio preferences and select the "USB Audio Codec" as their primary sound device. You also may need to restart your music playing program (iTunes, Windows Media Player, etc) once the Micro DAC is plugged in. See pg. 9 for more hook up information.

4. Pre-Amp Output The Pre-Amp Output on the rear of the Micro Amp is an excellent way to provide a volume controlled output to your desktop self-powered speakers or as a source for a speaker power amp. The output is in parallel to the headphone jacks, so you will hear music from both your headphones and your speakers (although volume levels may vary). In true pre-amp fashion, the volume pot provides a variable-controlled signal output to speakers; the louder the volume setting, the louder your speaker signal. While this output can be used as a second headphone jack, avoid connecting two highly efficient ear canal headphones to each output, use a splitter from the front jack instead.

Specifications

Portable Micro Amp

- Single Analog Input
- Headphone Output and rear Pre-amp output
- Selectable Gain Settings (3)
- Selectable Crossfeed Function
- +/-4.2V Li Ion Battery Power Supply
- DC coupled signal path, from input to output
- Integrated output stage, biased into class A operation
- Resistors are low noise, low drift .1% metal film types
- Local device decoupling with ultra low ESR electrolytics
- Shortest signal path possible, PCB routed with high-speed signal integrity and low noise in mind
- Multi-layer PCB with dedicated, low impedance power and ground layers
- Linear Tech LT 6234 op amps in gain & crossfeed stages
- Analog devices AD8397 op amp in output stage

.. with DAC option

- USB & optical/coax inputs
- 16 to 24 bit operation
- 32, 44.1, 48 and 96kHz input sample rates
- 2.0 Vrms maximum line level output
- +/-4.2V Analog operation
- Independent low-noise regulation for digital and analog sections of mixed signal devices
- Analog Devices AD823 for analog output stage
- PCB designed with both high speed digital design techniques and low noise analog design techniques in mind
- Resistors in analog section are low noise, low drift .1% metal film types
- Local analog device decoupling with low-ESR, tight tolerance PPS film capacitors
- Multi-layered PCB with dedicated, low impedance power and ground layers and maximum separation of noisy digital signals and sensitive analog signals
- Digital receiver is Cirrus CS8416
- DAC is Texas Instruments PCM1793

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 crossfeed 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.

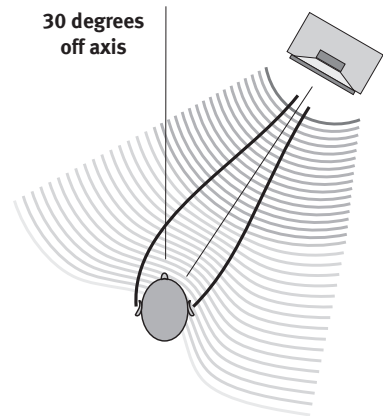
The crossfeed switch in HeadRoom amplifiers allow you to cross-feed a little of the left and right channels across to each other through a short time delay.



Plain
Headphones



With
HeadRoom



Far ear
hears
slight delay.

Near ear
hears sound
first.

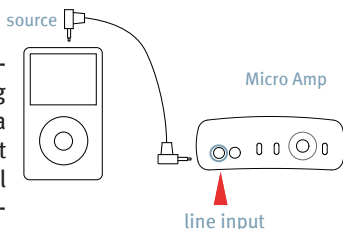
Connecting Your Portable Micro Amp

Connecting the Micro Amp to Analog source:

Source with line out or headphone jack:

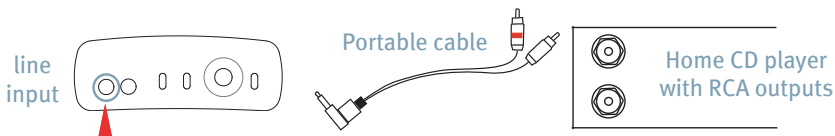
Hook the Micro Amp to your iPod, portable CD player, or any other source with a headphone jack using a mini-mini cable. If your source happens to have a line-output, then even better; use the line output rather than the headphone jack (using line-out will completely bypass the player's volume control altogether).

Simply run the mini-mini cable from the line-out or headphone jack of your player into the line input on the front of the amp.



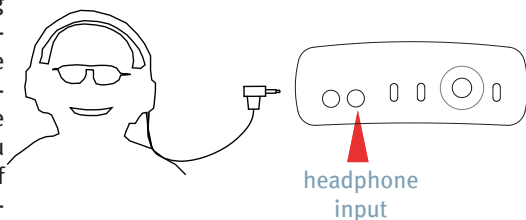
Source with RCA outputs:

If your CD player has a set of RCA outputs, an RCA to Mini Cable will allow you to connect the RCA outputs of your player into the line input on the Micro Amp. Be sure to note that as always, red or 'R', designates right channel on RCA inputs.



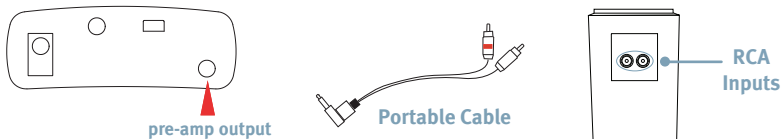
Connecting Your Headphones:

Now, for the best part: simply plug your headphones into the headphone jack one on the front of the Micro Amp (be sure to turn the volume down first). If your headphone jack is a 1/4" termination, or if you need to power more than one pair of headphones, please see our explanation in #1 on page 2.



Using Self Powered Speakers with the Micro Amp

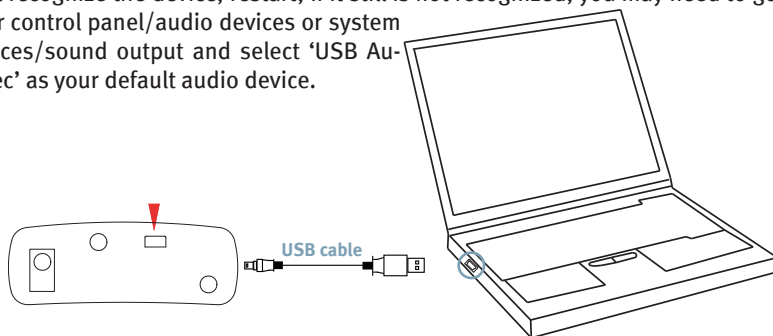
You can use your Micro Amp as a miniature pre-amp for self powered speakers. Most self-powered speakers have RCA inputs, in which case you will use a mini-RCA cable to attach to the Micro Amp. Attach the mini end of your cable to the pre-amp output of the Micro Amp. Plug the other RCA cables into the back of your speakers. If your self-powered speakers have a mini input, use a mini-mini cable to connect your Micro Amp.



Connecting Your Portable Micro Amp with DAC Option

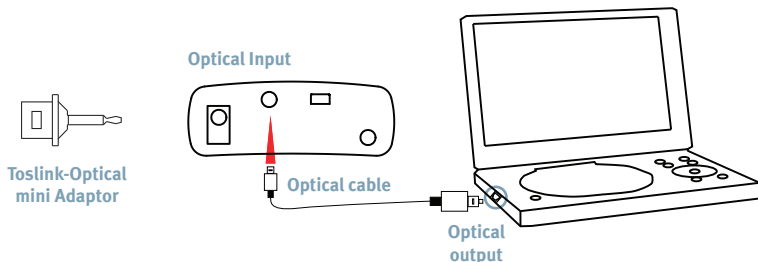
Connecting to your Computer:

The most convenient and common way to get a high quality signal out of your computer is with USB output. (If your computer has optical outputs, then skip to the next section.) Simply plug a USB cable into your computer, and plug the smaller end into the back of the amp. In most cases your computer will instantly recognize the amplifier, but you will need to restart your music management program. If your computer does not recognize the device, restart; if it still is not recognized, you may need to go into your control panel/audio devices or system preferences/sound output and select 'USB Audio Codec' as your default audio device.



To a Portable DVD player (or other device) with Optical Outputs:

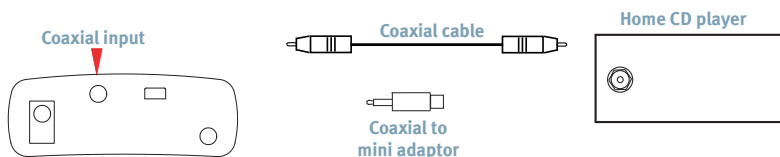
You will need an appropriate optical cable and a Toslink-Optical Mini Adaptor, visit headphone.com to purchase these items. Plug one end into your source and connect the other end into the adaptor, then into the back of the amp.



To A home CD player (or other device) with a Coaxial Output:

You will need a coaxial cable and a RCA-Mini Mono Adaptor, visit headphone.com to purchase these items. Plug one end into your source and connect the other end into the amp. . Plug one end into your source and connect the other end into the appropriate input on the back of the amp.

- Switch the Digital Input Selector Switch to 'coaxial'.



30 Day 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!

Portable Micro Amp Warranty:

The HeadRoom Portable Micro Amp is warrantied for two years. Battery replacement on the Portable Micro amp is warrantied for one year. After one year, your battery will be replaced for a small fee. If anytime within the first two years of your purchase you have a problem with your Portable Micro Amp, 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

If you have an older HeadRoom amp that is out of warranty, call us at 800.828.8184 ext.104 or email service@headphone.com to troubleshoot the problem with our Service Department. Upgrade 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.

Exchanges & Returns

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.

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.

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:

www.headphone.com
Toll Free: 800-828-8184
Phone: 406-587-9466
Fax: 406-586-9484



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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