



The Wheatfield Audio HA-4

The HA-4 headphone amplifier from Wheatfield Audio is a unique solid-state headphone amplifier that combines an excellent amplifier with equalization and crossfeed processing to make your headphone listening experience similar to the sound of fine speakers.

A Fine Amplifier

First and foremost, the HA-4 is an excellent audiophile-quality amplifier. It sounds great, with or without the audio processing enabled.

The HA-4 is designed to drive *any* headphones, from 8 ohms to 600 ohms. Unlike many competing amps, which either lack the current drive for low-impedance headphones, or the voltage capability for high-impedance headphones, the HA-4 can drive them all, with up to 250mA peak current, 35V P-P voltage, and a 2.5 ohm output impedance.

Frequency response (with equalization disabled) is flat within ± 1 dB over 20 Hz to 75 kHz, ± 3 dB from 10 Hz to 100 kHz.

High-quality components are used in the HA-4, especially where they can be heard. Wima MKP-10 polypropylene capacitors are used extensively, for example.

No wimpy AC adaptor or batteries here! The power supply built-in to the HA-4 provides a stout, clean supply of DC to the amplifier. It uses a toroidal transformer for low noise, and can operate on AC mains anywhere in the world.

Head-compensating Equalization

When you listen with headphones, your hearing is not the same as when you are listening to open-field speakers. When the ears are covered with headphones, some frequencies are emphasized, and others attenuated. Even though the frequency response of your headphones may be very flat, the response that you hear is *not* flat.

The HA-4 has a three-band equalizer that is designed specifically to flatten the response characteristics that the headphone and ear together have, to make headphones sound more like high-quality speakers.

The response of the EQ at the three center frequencies can be adjusted from almost flat to a boost of about +12dB. This allows compensation for the listener's ears, music preference, and personal taste.

The sound of your headphones with the EQ enabled is very different, and may take some getting used to. We suggest that you compare the sound to good speakers.

After listening for a while, we believe that you'll find that the sound using the EQ is much more natural, and without it, the headphones sound dull.

Crossfeed Processing

One of the reasons that headphone listening sounds un-natural and fatiguing is that, using headphones, the audio from each channel is directed only to one ear. Obviously, when you listen with speakers, your left ear can still hear some of the sound that's coming from the right speaker, and vice-versa. Headphones prevent this natural coupling between channels.

The HA-4 employs a simple passive crossfeed circuit that couples some of each channel into the opposite channel. The crossfeed is higher at low frequencies, and drops off to almost none at high frequencies. This emulates the directionality of the ears, which increases with frequency.

Another affect of the passive crossfeed is to introduce some delay in the path between channels. This simulates the delay that is encountered for sound to travel to the ear that is farther away from the sound source.

Though the simple circuit used in the HA-4 is arguably less accurate than the processing done in other amps, it has the advantage that it does not introduce any comb-filter effects to the response curve. Because of this, it sounds more natural.

The HA-4 allows the listener to select two levels of crossfeed, or none at all.

A Place To Put Your Headphones!

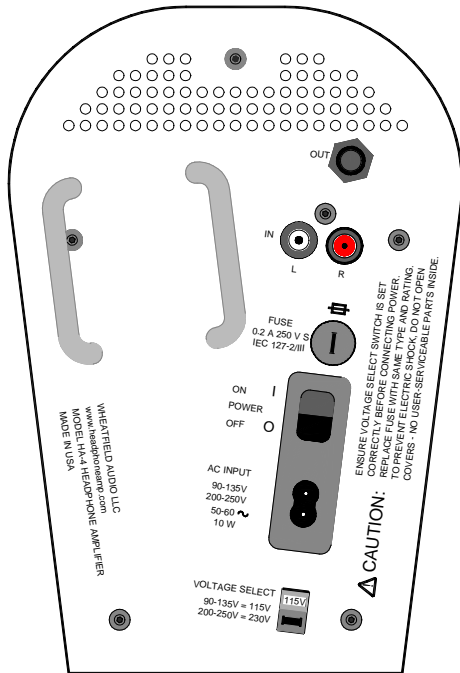
The unique design of the HA-4 provides something that you really need – a safe place to store your expensive headphones when they're not on your head!

The HA-4 is shaped, well, like a *head*. It is sized to allow you to put your headphones on it, without any chance of stretching or damaging it. And the cord can be safely stored with a holder on the back of the HA-4.

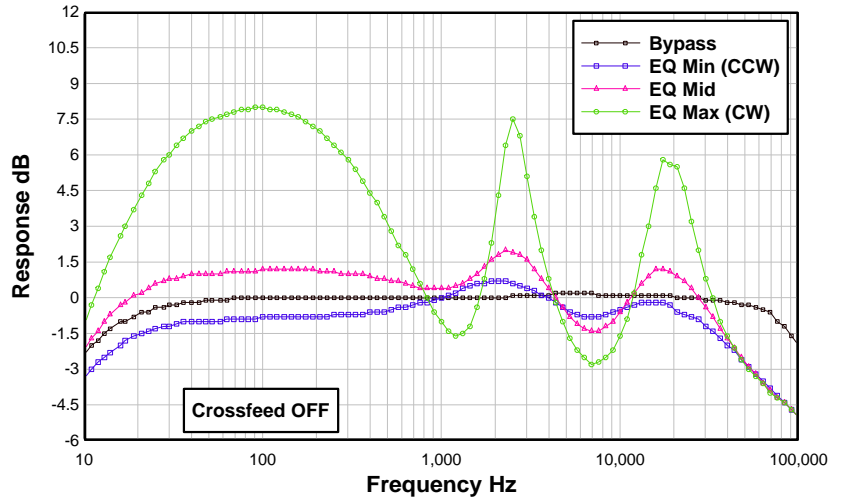
The surface of the HA-4 is covered in 3/8" thick wool felt. The felt is soft and cannot cause any abrasion to sensitive ear cushions. And being wool, it also can help wick away any skin oils that are deposited onto your headphones.

Specifications

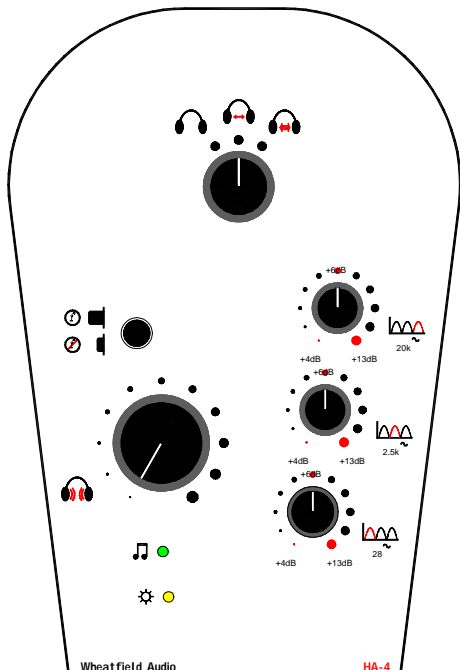
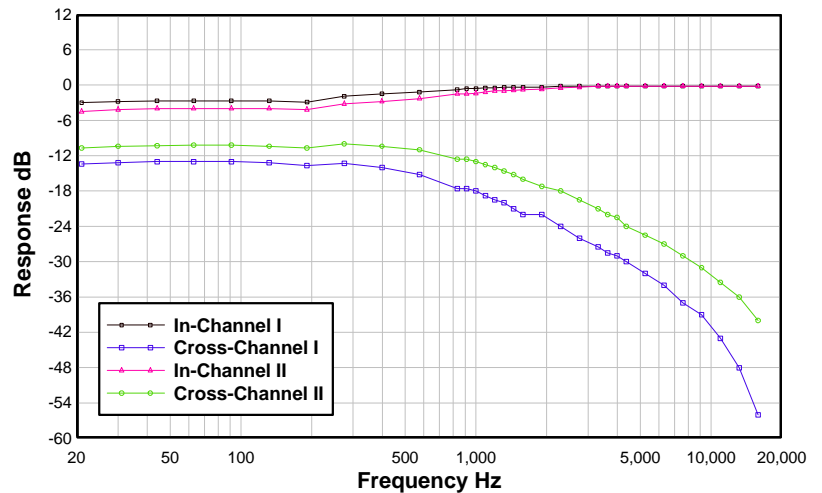
Frequency Response (filters bypassed): 10Hz - 100kHz ± 3 dB
 THD+N (1kHz, 1V RMS out, filters bypassed): <.01%
 Noise: -TBD dB
 Maximum output voltage: >30V P-P (11V RMS)
 Maximum output current: 250 mA Peak
 Maximum continuous output power: 1W @ 32 ohm load
 0.5W @ 600 ohm load
 Output impedance: 2.5 ohms
 Input impedance: 100k ohms
 Power requirement: 90-135V or 200-250V, 50-60 Hz, 10W



EQ Response (Reference: 1kHz Bypass)



Crossfeed Response (Reference: 1kHz In-Channel I)



- POWER ON LED**
 This Yellow LED is lit when power is on
- OUTPUT ON LED**
 This Green LED is lit when the output is activated
- VOLUME CONTROL**
 Adjusts the gain of the amplifier
- CROSSFEED SELECTOR**
 Selects the amount of crossfeed:
 - No crossfeed
 - Some crossfeed
 - More crossfeed
- BYPASS SWITCH**
 Enables or disables the EQ and crossfeed
 - EQ and crossfeed enabled
 - EQ and crossfeed disabled
- EQ CONTROLS**
 Adjusts the response boost at frequencies of 20 kHz, 2.5 kHz, and 28 Hz
 Fully CCW: approximately +4 dB
 Fully CW: approximately +12 dB

The front panel controls of the HA-4 allow the listener to tailor the equalization and crossfeed settings to his or her own ears and tastes.

Crossfeed may be enabled at one of two different levels, or disabled completely.

The equalization controls allow the amount of boost in each of the three frequency ranges to be adjusted.

A bypass switch routes the audio signals around the entire processing circuit, leaving only the flat amplifier in the signal path.

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