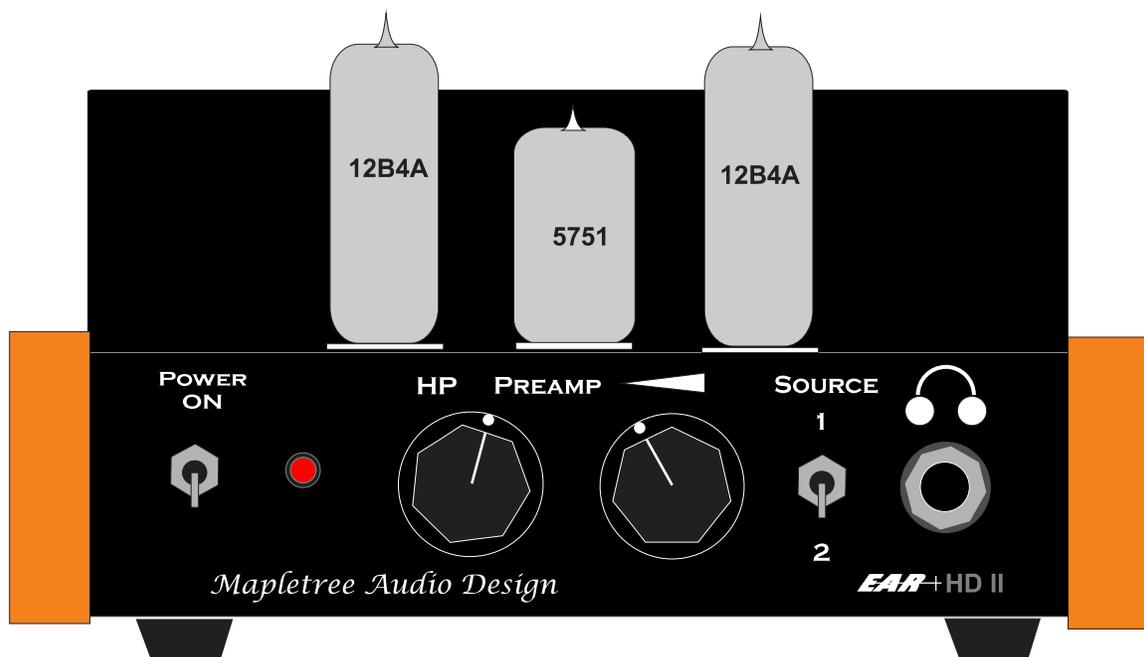




## *Ear+ HD II*

# High Definition Stereo Headphone Amplifier/Passive Preamplifier



## *Users' Manual*

Rev June 20/19

Mapletree Audio Design  
R. R. 1, Seeley's Bay, Ontario, Canada, K0H 2N0  
(613) 387-3830  
[www.mapletreeaudio.com](http://www.mapletreeaudio.com)  
[info@mapletreeaudio.com](mailto:info@mapletreeaudio.com)

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## ***Introduction***

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The Mapletree Audio Design *Ear+ HD II* Stereo Headphone Amplifier/Passive Preamplifier represents the ultimate performance development of the *Ear+* family. The use of premium passive components, including Nichicon Muse electrolytic and Panasonic polypropylene capacitors, yields noticeably enhanced bass definition, inner detail, and transparency. Features include:

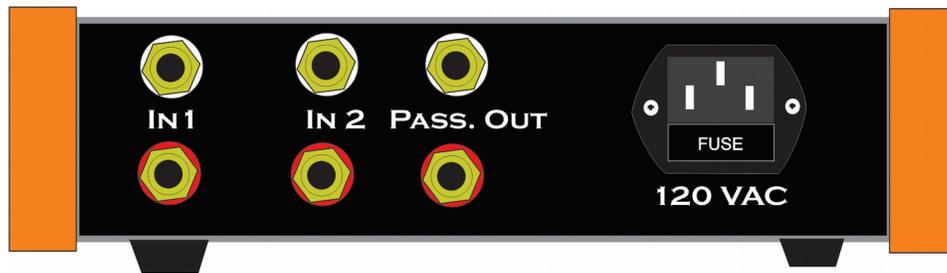
- ◆ The exclusive use of high quality new old stock (NOS) and currently manufactured tubes that can be obtained at modest cost from many suppliers.
- ◆ The use of premium passive components (precision metal film resistors, polypropylene output capacitors, ultra high speed rectifier diodes, and Alps volume control).
- ◆ Wide frequency response: 10 Hz – 20 kHz –1 dB.
- ◆ A para-feed cathode-follower headphone output circuit capable of driving a wide range of headphones with impedances from 30 to 300 Ohms.
- ◆ DC heater power supply for low noise.
- ◆ Two inputs with source selector switch.
- ◆ Passive preamp mode with inputs/volume control switched to passive output jacks.

## **Power Connections**

The switch on the left of the front panel turns on the ac power to the amplifier. The power on condition is indicated by the illumination of the pilot light. It takes about 30 seconds for the tubes to reach operating temperature ready for use. During operation, is it normal for the chassis to become warm to the touch.

The standard IEC line cord is attached to the receptacle on the rear panel of the *Ear+ HD II*. It is compatible with a 115-125 VAC line with a frequency of 50–60 Hz. A 20mm, 1 A/250 V fuse provides primary protection for the power supply. It can be accessed by removing the fuse drawer from the AC receptacle with power off. Under normal conditions, it should not be necessary to replace the fuse. If power fails to come on, you can check the fuse and replace if necessary. A spare fuse is located in the fuse drawer. If the fuse blows a second time, you should not try to operate the unit. Contact Mapletree Audio Design for information regarding service.

## **Input/Output Connections**



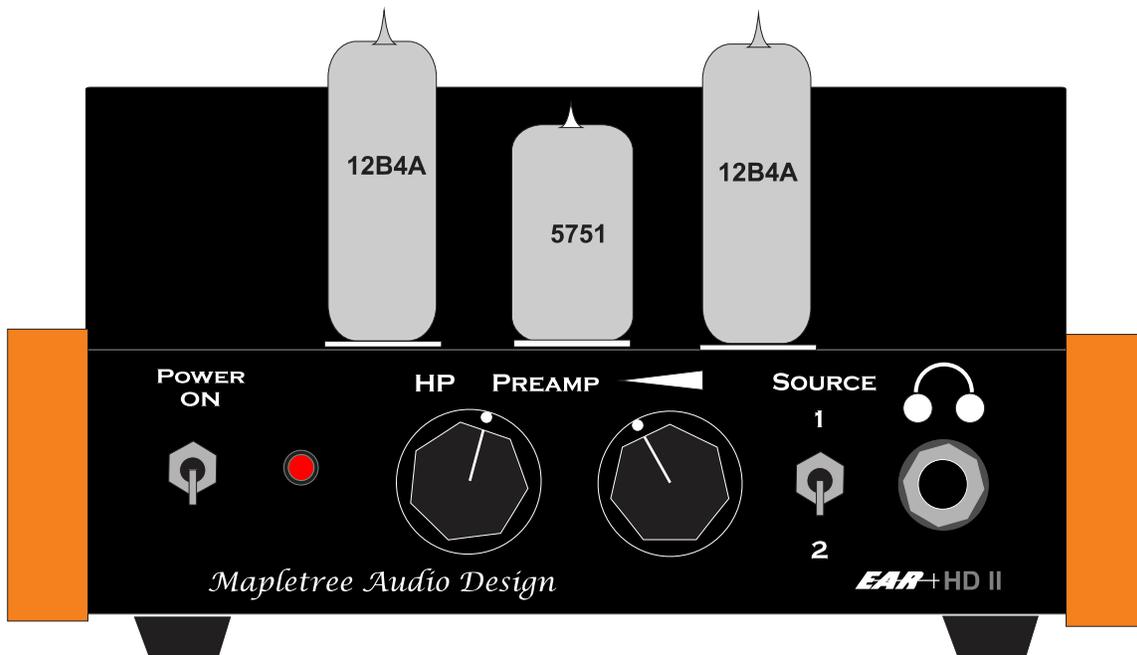
RCA jacks for two line inputs and a passive output are provided on the rear panel. Left channel jacks are uppermost with the white ring washer. The front panel source selector switch is used to select the active input. The input sensitivity is 0.4 V to produce a 10 mW headphone output power. The input impedance is 50 kOhms. The passive output jacks are fed from the volume control and in Preamp mode can be used to drive a suitable power amplifier under which condition the power switch may be turned off. In Preamp mode, the signal is isolated from the *Ear+* amplifier circuitry.

The headphone output jack is a standard 1/4" stereo phones jack with the left channel connected to the tip contact. If your headphones are terminated in a 1/8" plug, an adapter is required (usually supplied with your headphones). Headphone impedances from 30 to 300  $\Omega$  are suitable. A sensitivity rating of at least 97dB/1mW is recommended.

## **Controls**

The front panel volume control acts on both channels simultaneously. Tracking between channels is typically better than 0.5 dB over the control range.

The input source selector switch is used to select the desired input signal, as described above. The mode selector switch is used to switch between headphone (HP) and passive preamp functions. In preamp mode, the passive preamp outputs are isolated from the headphone amplifier circuitry. The input source selector switch and volume control remain active. In headphone (HP) mode, the passive output jacks are disabled.



## **Tubes**

The 12B4A (V2, V3) output tubes are located next to the transformer cover enclosure. The driver tube (V1) is located nearest the front of the chassis. A tube burn-in period of several hours may be needed to achieve the best sonic performance. Tube life should be thousands of hours. Aging tubes may result in a reduced gain in one or both channels or an increase in noise levels. Infrequently, a heater may burn out which is indicated by total loss of sound. You may have been supplied with either a 5751, ECC83, or 12AX7 for V1 which are equivalent types (the 5751 exhibits slightly lower gain). Replacement tubes can be obtained from several suppliers in the U. S. and Canada. Some listeners enjoy trying different brands and variants of tubes.

## **Warranty**

Mapletree components are warranted for 2 years to the original purchaser for failure of all parts (excluding tubes). Tubes are warranted for 90 days exclusive of shipping cost. Service, including parts and labor (but excluding shipping), is free within the warranty period.

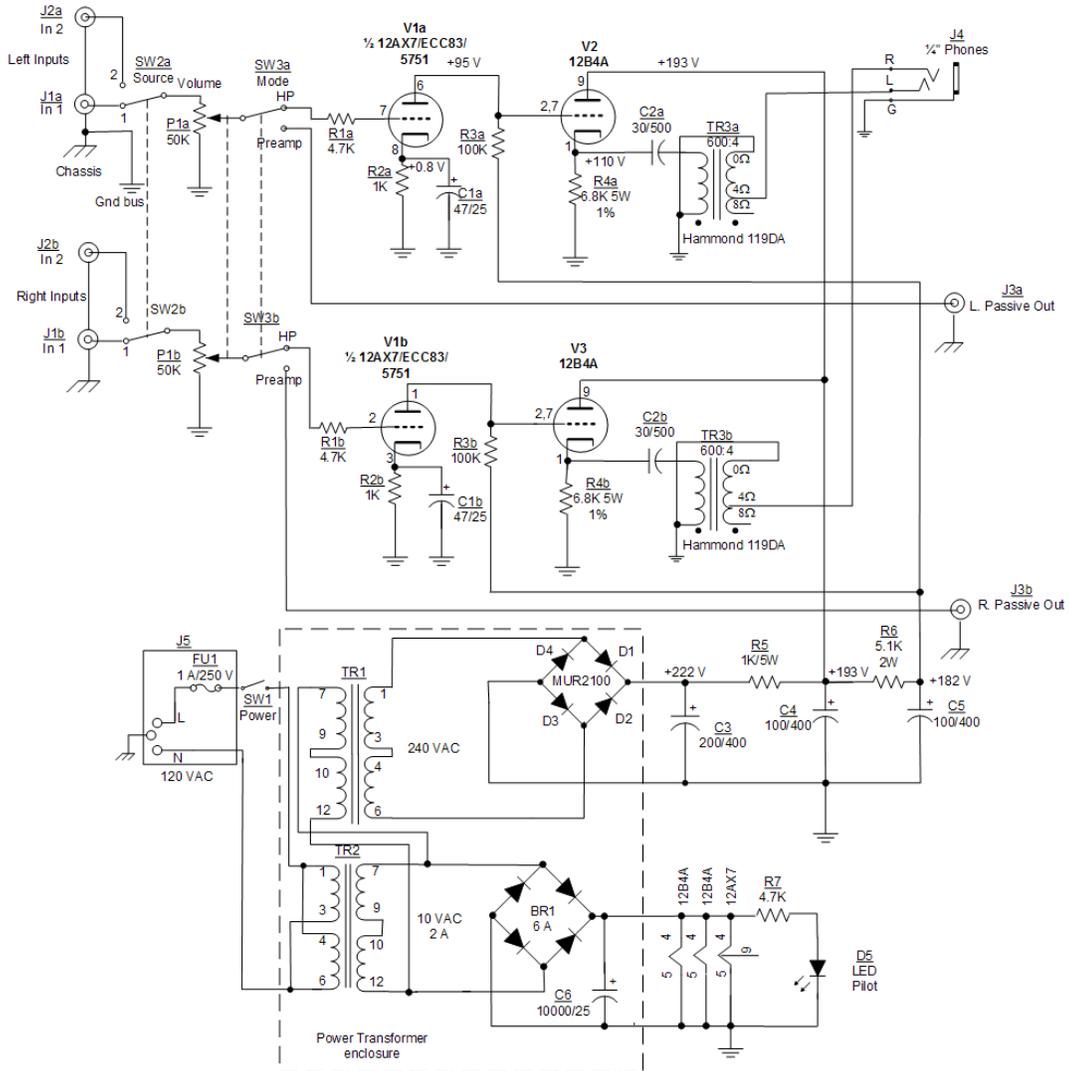
## **Parts List**

<b>Reference</b>	<b>Description</b>	<b>Qty.</b>
BR1	6 A rectifier bridge	1
C1a,b	47uF/25V electrolytic capacitor (Nichicon Muse)	2
C2a,b	30uF/500V polypropylene capacitor (Panasonic)	2
C3, C4, C5	100uF/400V electrolytic capacitor (Nichicon)	3
C6	10000uF/25V electrolytic capacitor	1
D1-D4	MUR 2100 ultra high speed rectifier diodes (2 A, 1000 V)	4
D5	10 mA LED (pilot light) with holder	1
FU1	1 A/250 V 20mm fuse	2
J1a,b, J2a,b, J3a,b	RCA gold plated phono jack	6
J4	1/4" stereo phones jack (Neutrik)	1
J5	IEC fused ac receptacle	1
P1a,b	50K dual audio potentiometer (Alps)	1
R1a,b	4.7K 0.6 W 1% metal film resistor	2
R2a,b	1K 0.6 W 1% metal film resistor	2
R3a,b	100K 0.6 W 1% metal film resistor	2
R4a,b	6.8K 5 W 1% wire wound resistor	2
R5	1K 5W 5% wire wound resistor	1
R6	5.1K 2W 5% metal oxide resistor	1
R7	4.7K 0.6 W 1% metal film resistor	1
SW1	SPST switch (Power)	1
SW2a,b	DPDT switch (Source)	1
SW3a,b	2 position, 2 pole rotary switch (Mode)	1
TR1, TR2	10 VAC 20 VA filament transformer	2
TR3a,b	600:8 Ohm 12W audio output transformer (Hammond 119DA))	2
V1a,b	5751/ECC83/12AX7 tube	1
V2, V3	12B4A tube	2

# Mapletree Audio Design

## Ear+ HD II Headphone Amplifier/Passive Preamplifier

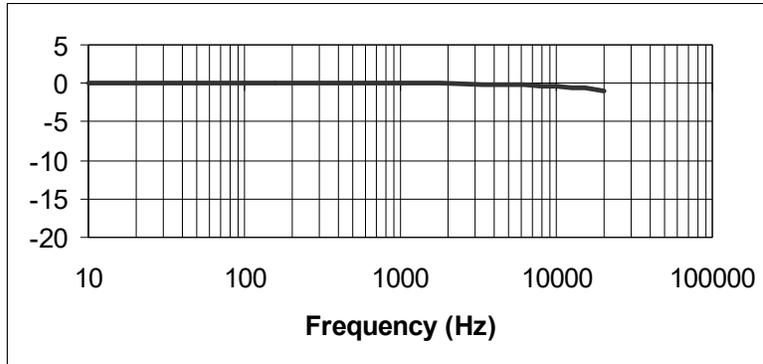
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## **MAD Ear+ HD II Specifications**

### **Headphone Output (100 $\Omega$ load)**

Frequency response at 1 V rms (10 mW) output:



Maximum undistorted output at 1 kHz: 1.5 V rms (70 mW across 32 Ohms)

Gain: 10 dB

Output impedance at 1 kHz: less than 4  $\Omega$

Input impedance: 50 k $\Omega$

Hum and noise at output (max volume): less than 0.2 mV rms

Recommended load impedance: 25–600  $\Omega$

Recommended headphone sensitivity: 95 dB/1mW

Phase: non-inverting

Power consumption: 35 W, 120 VAC 50-60 Hz

Fuse: 1 A/ 250 V, 20mm fast blow fuse located in fuse drawer of IEC AC receptacle