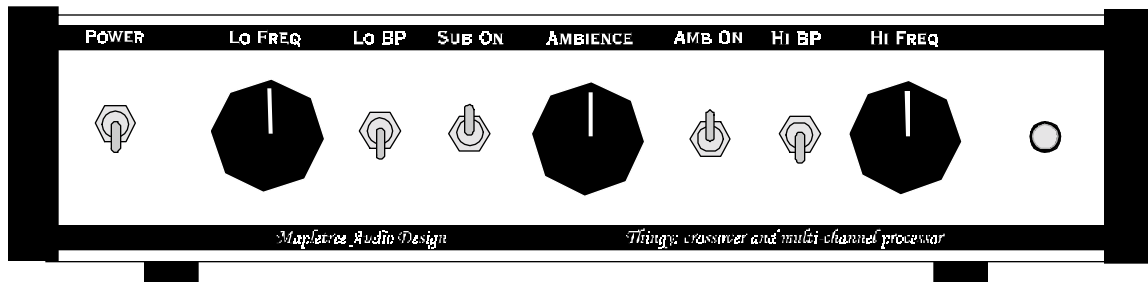




## *Thingy Stereo Signal Processor*



## **User's Manual**

***240 VAC Version***

Revised Jan. 28/08

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## **Introduction**

The Mapletree Audio Design *Thingy Stereo Signal Processor* is a unique audio component that combines the functions of a high-level crossover, subwoofer driver, and ambience recovery driver in one compact package. Features include:

- ◆ Low and high frequency outputs utilizing a 500 Hz, 6 dB/octave passive crossover.
- ◆ Single-chassis design with integral power supply.
- ◆ Use of two 12BH7A tubes, available as new old stock (NOS) or currently manufactured (supplied).
- ◆ DC heater supply for low noise.
- ◆ Individual level controls for high and low frequency outputs, subwoofer output, and ambience output.
- ◆ Switches for bypassing the high and low frequency filters and defeating the subwoofer and ambience outputs.
- ◆ *Auricap* metalized polypropylene signal coupling capacitors.
- ◆ *Alps* level controls.

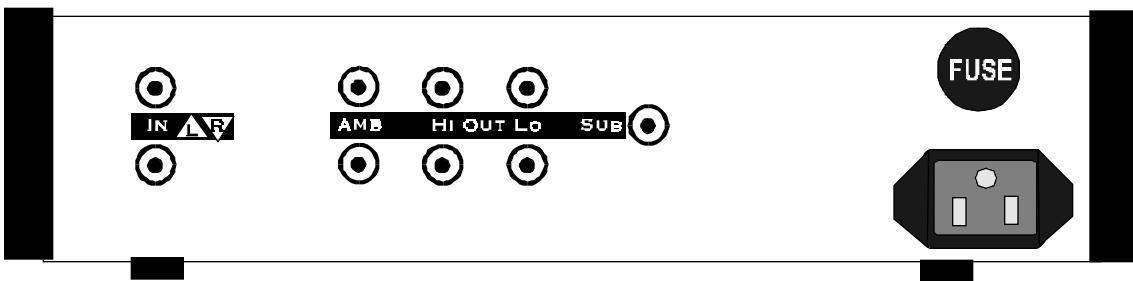
## **Power Connections**

The Mapletree *Thingy* includes an integral power supply providing the plate and heater voltages for the tubes. The power cord supplied is a N. American type 3-conductor equipment cord which may be adapted to 240 VAC systems by use of the appropriate plug adaptor, or alternatively, a custom cord with the appropriate plug can be fitted. The fuse is rated at 250 V, 0.5 A. The power switch on the front panel is used to activate the power supply. The pilot lamp indicates that the unit is on. 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.

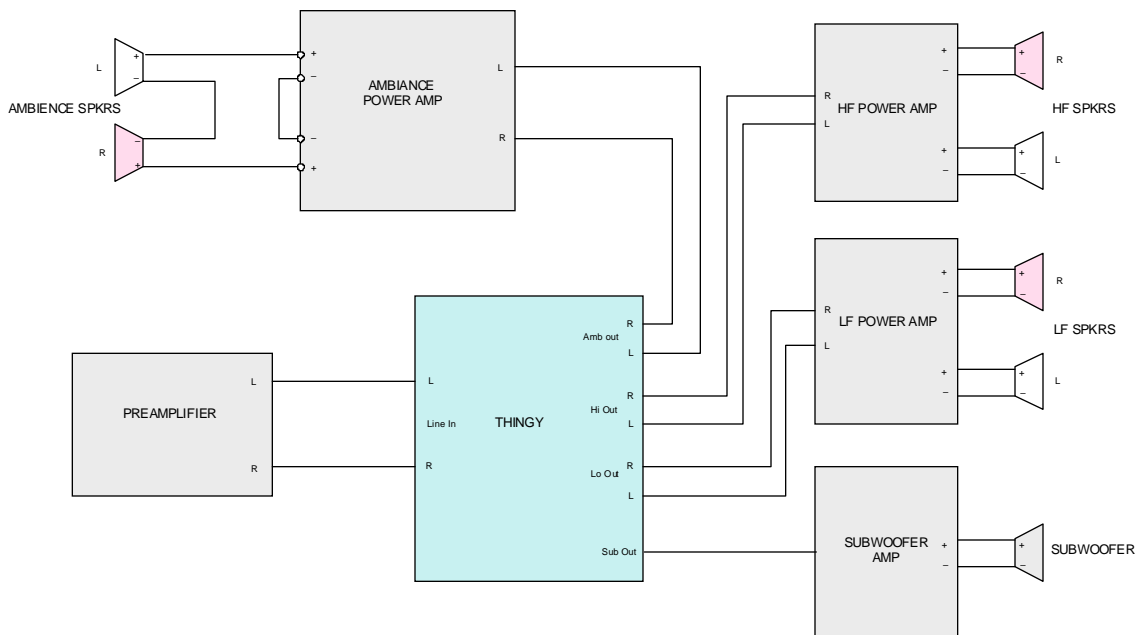
Under normal conditions, it should not be necessary to replace the fuse. If power fails to come on, you can check the fuse and replace with a spare if necessary. If the fuse blows a second time, you should not try to operate the unit. Contact Mapletree Audio Design for information regarding service.

## Input/Output Connections

The signal input/output jacks are located on the rear panel of the chassis. RCA jacks are provided for a stereo line input, and stereo line outputs for low and high frequency channels and the ambience channel. The subwoofer output is a mono signal equal to the sum of the left and right stereo channels. The subwoofer output is derived from the low frequency outputs without additional filtering. The line input impedance is 100 k $\Omega$ , which should be compatible with any line source such as CD/DVD player, tape deck, tuner, or computer sound card. The output impedances of the high and low frequency channels are dependent on the settings of the level controls. With level controls set at maximum, the output impedance of both the high and low channels is approximately 500  $\Omega$ . See the *Specifications* section for more details.



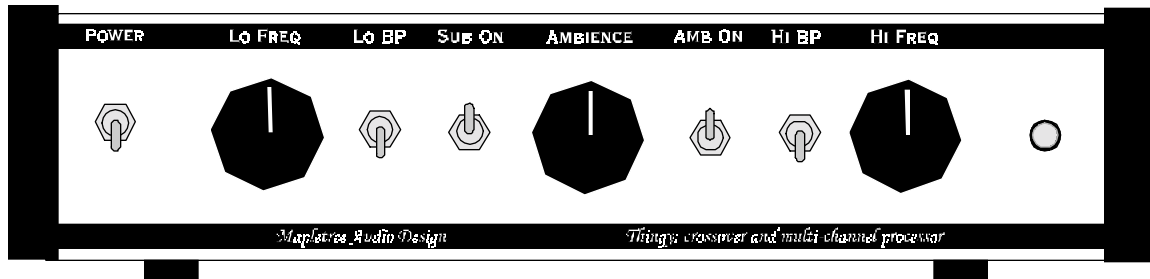
Separate stereo or monobloc power amplifiers are required for the low, high, and ambience outputs. A powered subwoofer is required that includes internal low-pass filtering. The low and high frequency power amplifiers can be used to drive individual speaker drivers or two separate speaker systems as shown below.



THINGY System Connections

## Controls

The front panel controls include level controls for low frequency, high frequency, and ambience outputs. The high and low frequency levels are normally set to maximum and the desired balance achieved by attenuating the appropriate frequency channel. This keeps the output impedance as low as possible for driving the cable and power amplifier input capacitance without high frequency loss (not important for the low frequency output).



The low frequency filter is bypassed with the LO BP switch in the up position. Similarly, the high frequency filter is bypassed with the HI BP switch in the up position. In addition the subwoofer and ambience functions can be turned off (the outputs are grounded) with the switches provided.

## Tubes

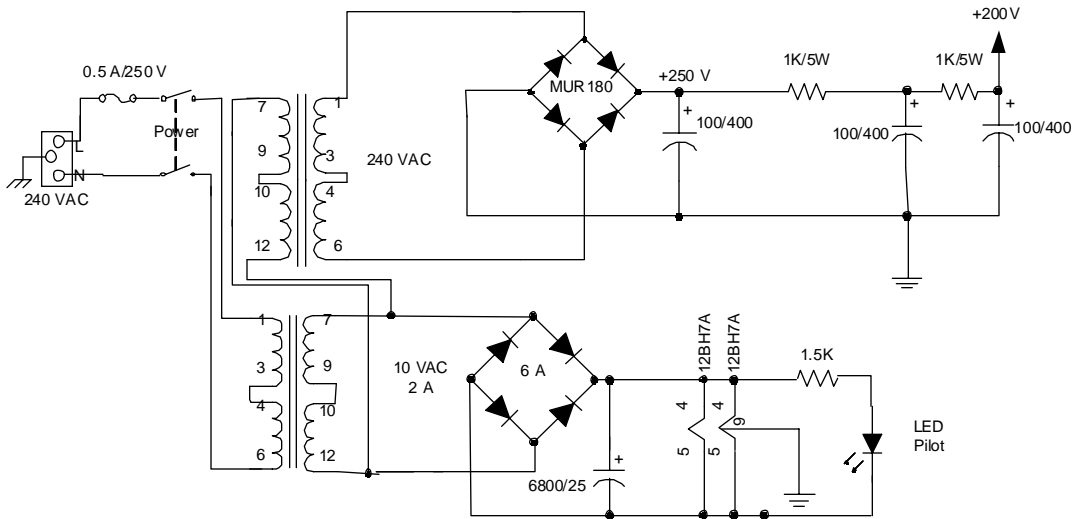
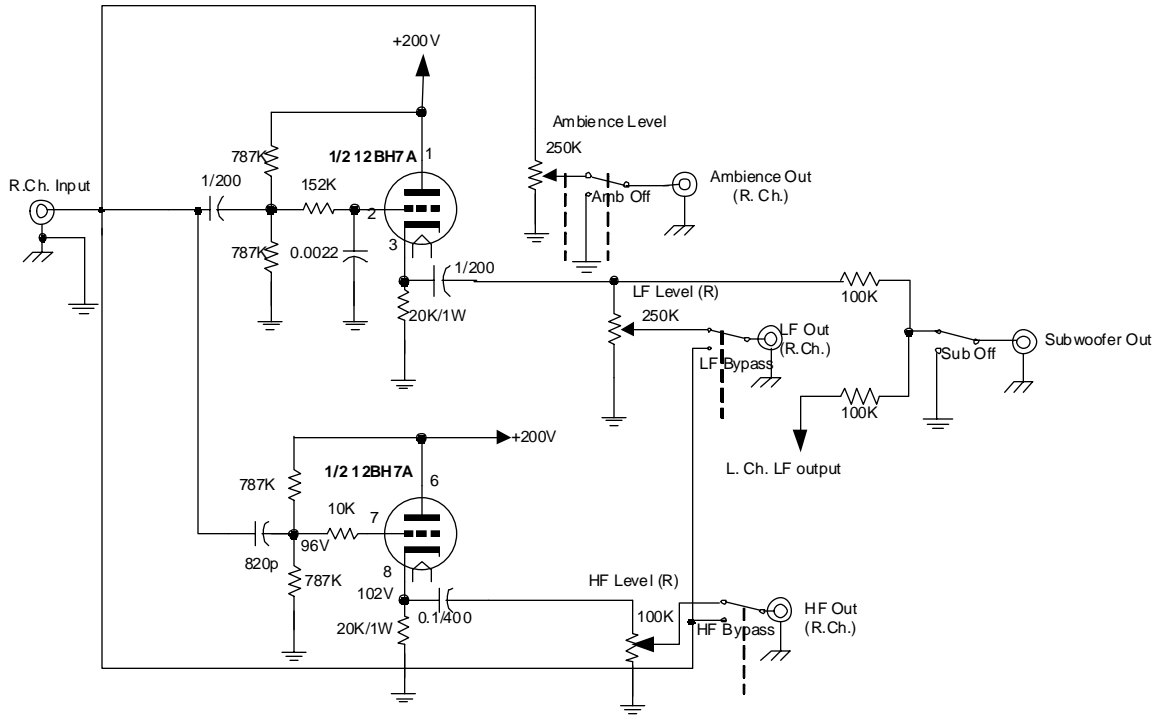
The vacuum tubes supplied are currently manufactured 12BH7A dual triodes and have been pre-tested. A burn-in period of several hours may be needed to achieve the best sonic performance. Tube life should be thousands of hours. Aging tubes may result in a reduced gain in one or both channels or an increase in noise levels. Infrequently, a heater may burn out which is indicated by total loss of sound. Replacement tubes can be obtained from several suppliers in the U. S. and Canada. Some listeners enjoy trying different brands and variants of tubes including new old stock (NOS) types.

# Mapletree Audio Design *Thingy* 240 VAC Version

Right Channel shown

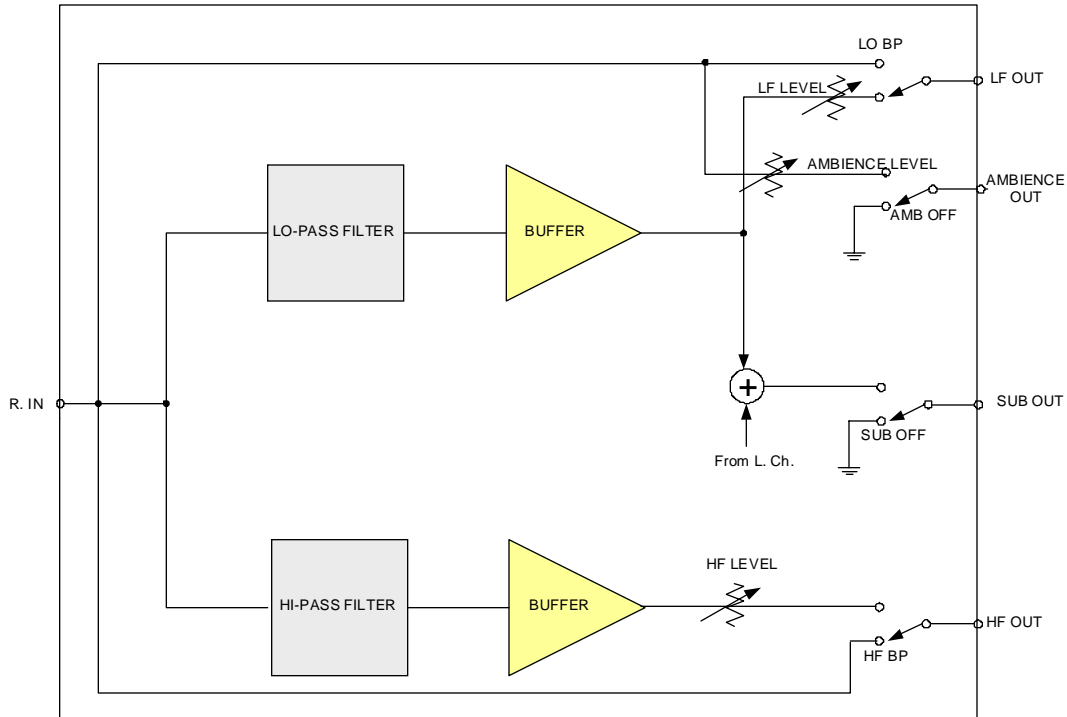
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Rev. Jan. 28/08



## Circuit Operation

The functionality of the *Thingy* can best be understood by referring to the simplified block diagram of one channel shown below.



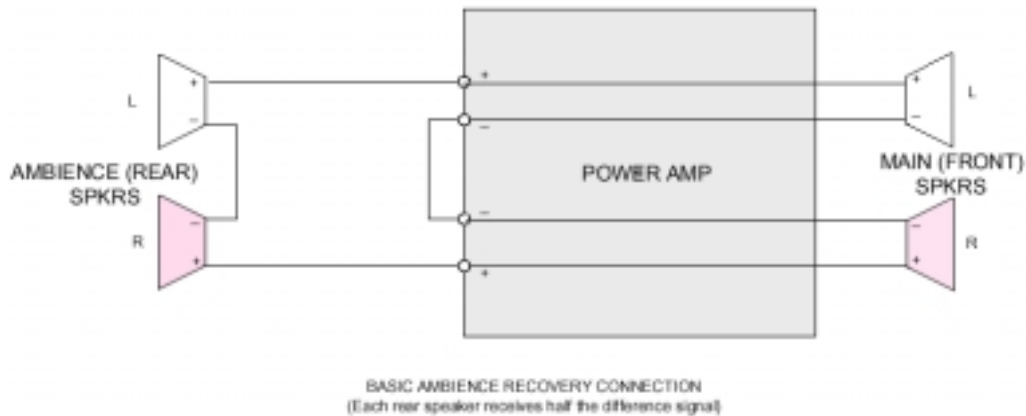
THINGY Functional Block Diagram (R. Channel)

The low and high-pass filters are implemented by passive resistor-capacitor networks as shown in the schematic diagram. These are isolated from the outputs with buffer amplifiers using the 12BH7A triodes in a cathode-follower configuration.

## Ambience recovery

What is often lacking in normal stereo reproduction is the sense of space that would be present if the music were heard live in a room, club, or concert hall. Ambience is the collective term for the presence of reflected sound waves that add or subtract from the direct sound waves to provide the ear with a complex sonic mix. Of course, sound waves reflect from your listening room as well, but these are not related to those in the original environment (think for now in terms of a live recording as opposed to a studio, although ambience can be simulated in that case as well). Reflected sound waves are usually phase-shifted versions of the direct waves and the ear uses this information as well as relative sound levels to

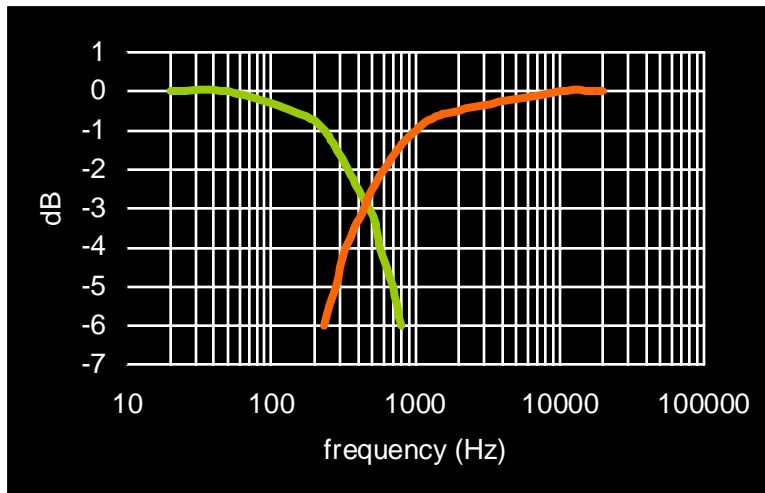
construct the overall sound field. This 3-dimensional sound field can be re-created in some cases using multi-speaker home theatre systems, if the ambient information is actually encoded, as opposed to strictly directional sound effects. In the early 1970s, David Hafler of Dynaco proposed a simple bridging circuit that permitted delivery of phase-reversal stereo information to a pair of rear-mounted speakers. The circuit was sold as the *Dynaco Quadaptor* which facilitated the speaker and amplifier connections and provided level and function controls.



What the Dynaco circuit does is derive some phase-shifted information from a normal stereo recording and feed it to a pair of rear speakers, which radiate it as reflected sound waves, creating some of the sense of ambience present in a live music situation. In its basic form, it is implemented at the power amp speaker outputs and requires no additional amplifiers or power capability. The circuit is shown above. The right rear speaker receives  $\frac{1}{2}(R - L)$  information and the left rear speaker receives  $\frac{1}{2}(L - R)$  information. Since the rear speakers will be nearer the listener, some attenuation may be desirable. This can be provided in the Dynaco system by adding a resistor from the negative speaker terminal junction to the amplifier ground. With the *Thingy* driving a dedicated ambience power amplifier, the rear speaker level can be controlled as desired using the ambience level control.

## Specifications

**Filter frequency response:** *Note:* The filters are designed to produce a 6 dB/octave attenuation with a cutoff frequency of 500 Hz. This makes them most suitable for driving separate speaker systems but separate speaker drivers can also be used providing the 500 Hz crossover frequency can be accommodated.



**Voltage Gain (100 k $\Omega$  load, 1 kHz):** 0 dB

**Output impedance:** Hi and Lo outputs with levels controls at maximum: <500  $\Omega$   
Ambience output: equal to source output impedance with level control at maximum  
Subwoofer output ~ 50 k $\Omega$

**Input impedance:** 100 k $\Omega$  shunted by ambience power amp input impedance

**Hum and noise at Lo and Hi outputs (max levels):** less than 200  $\mu$ V rms

**Phase:** Non-inverting

**Power consumption:** 20 W

### Warranty

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