

For years now I have been using a Pioneer PD-S06 CD player in my main system. It has been a real workhorse, stable and playing quite nice. This was now the oldest piece of my main system, so it was time to upgrade.

I wasn't really planning on upgrading the transport mechanism, but stumbled over a Squeezebox. As a digital transport it is simply genius as it is much more reliable than a CD-drive of any kind. As a bonus it is very convenient to use.

Then I started looking at different DAC projects. I started out looking at the D1, but wanted something easier as a first entry into the DAC world. After some research I stumbled over an article praising the CS8416/CS4398 combo, and then I found this thread:

<http://www.diyaudio.com/forums/showthread?s=&threadid=137976&perpage=15&pagenumber=1>

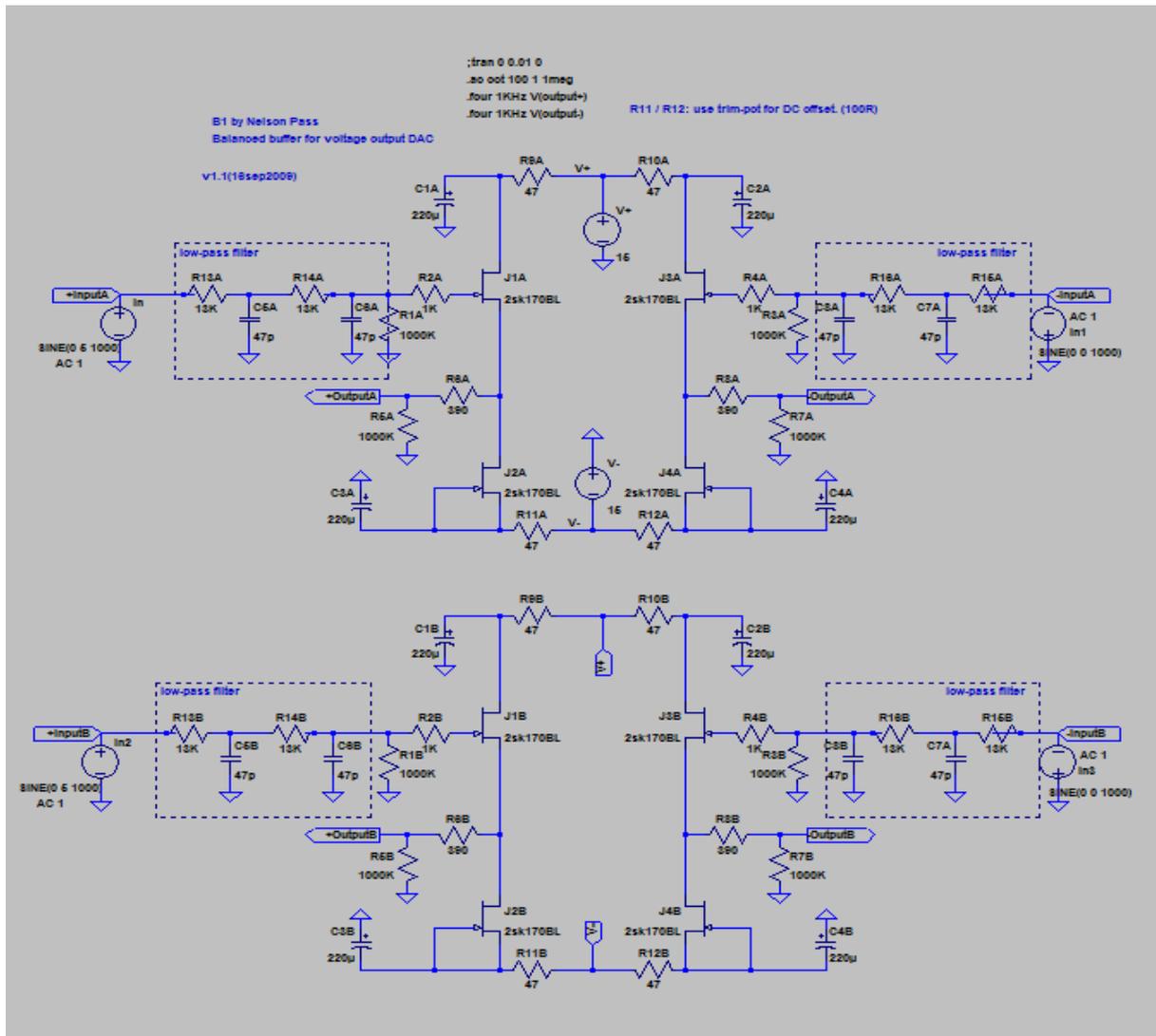
There are a lot of discussion around tweaking on this DAC, but I wanted to go with the thoughts Nelson Pass introduced with the D1, a discrete output stage. The CS4398 is a voltage output DAC, and I hoped it would have enough output swing for my pre-amp. If this was the case I could use B1 as output buffer, and get balanced output.

I ordered 2 DAC's, so I could have one stock DAC as reference, and one to work on.

Three weeks ago I built a box for the stock DAC. It worked right away, and the improvement was not subtle.

I used the next two weeks etching PCB's and building the B1 output. Since I already had +/-12V regulated supplies on the DAC I decided to use them and run the B1's without capacitors.

Also I added a 2-pole passive low-pass filter at the input of each B1 channel. In the simulations it was not as steep as the active filter used with the on-board op-amps.



The first surprise came when I fired it up first time. 2.6V DC offset out of the DAC. Had to add coupling capacitors at the input's.

I installed trim-pots for R11/R12. I had the idea that I could use these trim-pots to adjust DC offset for each B1. But no, didn't work that way. The selected JFET's were relatively close matched (ranging from 7.2mA to 7.7mA  $I_{DSS}$  all paired within 0.1mA), and the offset were 0, 0, 3mV and 6mV for the four B1's respectively.

I desoldered the coupling caps at the output of the DAC, and replaced them with the wiring to my new output buffer.

The DAC have been playing for almost a week now, and the improvement over the stock DAC is not subtle!

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