

TASCAM M-3500 MODIFICATIONS

By Shorty - Jan 6 2010, 09:51 AM

1) Replace 2 line power cable to PSU with grounded 3 prong and internally ground to chassis. Also distribute this to multiple points on the PSU PCB to supply sufficient grounds on the far runs of the PCB (Done)

2) COMPLETELY rebuild power supply with audio grade components, same values, just higher quality. Easy and cheap via Mouser or Digikey

3) Consider replacement of PSU transformer with something higher quality, maybe a Toroidal, or just something nicer

4) ReCap all channels and master section with audio grade caps

5) Consider higher quality pots and faders, something nicer than the ALPS, perhaps even cheap P&G's

Here's where I get a bit more technical

Because of poor/faulty designed grounding scheme:

6) Run a 1" x 1/8" copper strip the length of the board, inside, on bottom, on standoffs. Branch grounds to multiple points on each channel strip to improve grounding scheme and evenly distribute sufficient ground.

7) Also branch to the master section as well.

Also consider tying this copper strip to a chassis ground lug on the rear of the unit, strap that down to the existing ground lug on the PSU, but go further and internally strap the chassis lug on the PSU directly to the ground lead of the power cable as well. The original ground leads from the PSU through the power cable to the mixer are very small gauge and DEFINITELY insufficient to support the ground load of the board.

Note: about 70% of the noise in this board is from poor grounding, in my opinion.

This leads to the next noisy stage of the board.

8) Parallel the entire buss section.

The buss section PCB's are noisy and insufficient, and provide too much resistance.

I started already but am not done yet. Buy a spool of solid copper wire. Not braid.

Strip the insulation off, and cut lengths to lay directly on top of the traces of the Buss PCB's.

Bend the copper wire into humps over the pins for the wiring, and solder all the points in between and at the ends.

This provides a cleaner, lower resistance bridge down the PCB.

Do this on the Buss PCB's that plug to each strip, and also the main buss PCB's that are on the bottom plate of the mixer, AS WELL AS the master section buss PCB

9) Replace all the pigtail wiring between the buss PCB's with quality copper strand cable, and copper or gold plated headers/crimp connectors/pins.

This will beef up the buss section and make it virtually silent.

10) Consider the same method of ground distribution, via copper strap down the board, but use plastic standoffs, and distribute power to all channels.

Use solid copper, then strand to strips where applicable.

The + side of things is a bit lacking as well, though not as bad as the ground scheme.

I did this with a Trident MDR32 (Basically a high end 65 series) and made it dead silent.

I have started work on the 3500 and already know I can make this board virtually silent, even short of recapping everything (Other than where needed).

The noise comes from the buss section and improper/inadequate grounding.

I tested some areas by temporarily ground strapping multiple points throughout the bus and master, and noticed HUGE improvement, even with just a few in place.

After all this work, consider the following:

11) Remove the opamps from a pair of channels, and solder IC sockets in their place.

Buy a pair of Burr Browns, THAT Corp, and other OpAmps for testing.

Being that you soldered in a socket, you can quickly and easily test a slew of OpAmps and A/B them against stock channels

When testing, be sure to mod, and A/B against stereo pairs of channels (ie, 1&2 with IC Sockets and different OpAmps to test, Panned 1L and 2R, vs 3&4 Stock OpAmps panned 3L and 4R)

Now you can test a variety of OpAmps quickly and easily and decide what to go with.

Burr Browns will run you \$900 for this board. I'll tell you if it would be worth while once I'm done with mine.

I don't think I'll be going with the Burr Browns, as they're nice, but THAT Corp also supplies some good equipment, as do many others.

I imagine I'll find OpAmps that sound every bit as good as Burr Browns, for the entire board, for \$300

12) Consider modding EQ's to your needs.

This would take a book, and it is very generic info not particular tho any particular board, rather EQ's as a whole, so you could google it.

That would all be enough to make this board SPANK a stock TOFT or Trident 65 series for sure.

I've messed with enough high end boards to know that there are areas of improvement open with any console, and the 3500 definitely has mad potential.

I will photodocument and start a new 3500/3700 mod thread once I'm done, or mostly done.