

Some thoughts on the external Tape Head preamp

First, thank you for your interest in our model Titan MKII hybrid tube tape head preamp. This project has been years in the making with quite a few iterations, before we settled on Titan MKII.

These are some of our thoughts on external tape head preamps, gathered over the years as well as a lot of feedback from users.

Using an external tape head preamp is not for the faint hearted!, and it is not as easy as just plugging the tape head preamp into your setup.

This may sound counterproductive, after all, we are trying to sell you a tape head preamp, but there are some caveats that need to be taken into consideration when thinking about an external tube tape head preamp which has a very high gain, around 50dB/x350, which falls into the phono MC cartridge realm.

Circuit -

Any tube preamp with such a high gain is very susceptible to external noise pickup, much more so than solid state high gain preamps. This is the main reason we went with a hybrid design, JFET/MOSFET input stage followed by a constant current sourced tube output stage.

We tried all tubes, and had a really hard time in keeping that noise level to an acceptable low level.

Design-

To keep the possibility of internal noise pickup as low as possible, we designed the pcb to pretty much house all components, including the XLR sockets which are soldered directly to the pcb. This minimizes the use for hookup wires, especially in the input region, where the incoming signal level from the tape heads is extremely low, in the millivolt region.

The signal at the preamp output is extremely high when compared to the input signal level, around x350, so we can get away with using more hookup wire there.

The all metal chassis also acts like a Faraday cage, providing a nice shield for all the electronics.

Hum-

This is a very contentious subject in the audio world.

We'll start by saying that Titan MKII is hum free when we ship it out, to the extent that no hum will be audible at normal listening levels.

We spent a lot of time with the whole design, pcb layout, component placements, internal wiring etc. to ensure a hum free listening experience.

Our test setup is a near perfect setup. The tape deck is right next to where we test Titan MKII, so the cable runs are super short. Our test setup is also ground loop free. This is a really important issue that can creep up, covered in more details later.

Tape Deck direct head out mod-

This is one of the most critical pieces in the setup when wishing to use an external tube tape head preamp.

Some pro decks already come with a factory direct head out option. In this case, some of the hard work is already done.

Most consumer decks do not have a direct head out, so this would need to be modified. Each deck is different and each will have an optimum way to run the cables from the head to the external XLR or RCA output. A lot of good information is available on the net. Our recommendation though is to have this done by a reputable tape deck tech.

Must do-

The tape head preamp should be placed as close as possible to the tape deck. The interconnects between the tape head out on the tape deck and input to the preamp should be as short as possible and preferably should be balanced/XLR.

Plug the power cord of the preamp into the same outlet as the tape deck (ground loop).

Try and keep all pieces of your system away from such things as fluorescent lights and other electrical pieces which are known to generate a lot of 'electrical noise/interference'.

Ground loop-

This is a tough one. Your system may have been working fine, then now suddenly by adding the preamp, or even another piece of audio gear, you suddenly have hum.

It is all too easy to blame the new piece of gear, refer to the Hum paragraph above.

Ground loops are a real pita, and can suddenly appear when adding a new piece of audio gear. There is not one simple solution to a ground loop issue. We will not go into detail as to what can cause ground loops, again, a lot of good information is available on the net.

An example.

With one of our older all tube personal setup, we had our model Elvis stereo amp connected to our model Aretha tone control preamp, with a turntable, CD player and streaming setup, driving a nice pair of Vandersteen 2Ci speakers.

We wanted to bi-amp this setup, so we added two of our model Buddy mono blocks. These were to drive the speaker subs and model Elvis to drive the speakers mids. As soon as we added the two mono blocks, we had a ground loop. Yes, all pieces were connected to the same Furman mains power conditioner. We tried different interconnect runs, types, different power cable runs, you name it, we tried it. Nothing worked. The ONLY way that we could eliminate the ground loop hum was to use a HumX on each mono blocks power cable. Ground loop hum gone! This was the solution for our setup, for yours, it may be totally different!!

So, what can you do when you suddenly get a ground loop hum when adding the preamp into your system.

To start with, Titan MKII has a ground lift switch on the rear panel. This 'lifts' the circuit ground, the same as the signal ground, from the house ground. This should always be set to 'LIFT'.

Lifting the circuit ground from house ground will eliminate any noise on the house supply being introduced to the preamps circuit ground.

NOTE: the chassis of Titan MKII is still directly connected to house ground for safety!

Change the switch to CHASSIS and see if that makes a difference.

Titan MKI also has two ground connections on the rear panel. One is chassis ground and one is signal ground. Connect the tape deck chassis ground to Titan MKII's chassis ground. Try and connect the tape decks chassis ground to Titan MKII's signal ground. Try and connect the tape decks signal ground to Titan MKII's signal ground or chassis ground. With other words, try many different combinations of ground connections between the preamp and tape deck.

If none of the above will help, you will now have to dig deeper. This is where our statement at the beginning really comes into play, *"Using an external tape head preamp is not for the faint hearted"*

You will now have to start experimenting with different things in order to try and eliminate this hum.

But let us say this. If you are not prepared to spend time, and perhaps a few extra \$, in order to eliminate this hum, then this may not be for you. Hopefully you just plug in Titan MKK and all is good. But here is a 50/50 chance that you will suddenly get a hum, so keep this in mind...and don't blame Titan MKII!

First, try a different house outlet for the preamp. Yes, ideally the preamp should be in the same outlet as the tape deck and your main preamp/amp. But as we indicated, ground loops can be a real pita and the final solution may not really make sense.

You may need to try a HumX or similar on the tape deck, main preamp, amp, or maybe even all of them.

Try running your interconnects a different way, same for your power cords.

An example.

One of our clients, who was kind enough to trial our prototype Titan MII, and who subsequently ended up purchasing his very own Titan MKII, experienced a hum when increasing the volume on his main preamp. He indicated that with most music he listened to, it was not audible.

However by increasing the volume level, he got some hum.

This did not sound like your typical ground loop issue, but he tried the ground lift switch on Titan MKII, as well as HumX on all of his other gear, to no avail. We were scratching our heads there for a while.

His solution was by placing Titan MKII in a different location, ie closer to the tape deck and trying a better quality set of XLR interconnects. Who would have thought.....

Yes, there is a lot to consider when adding a new piece of gear into your system, especially a high gain tube preamp.

There is a solution for every scenario, some solutions will be quick and easy, some not.

So do keep this in mind when you are considering an external tape head preamp.