Soundtraxx Tsunami 2 Review

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Not long after Soundtraxx released their new Tsunami 2 sound decoder (TSU2), I purchased one to give it a try in a locomotive. For whatever reason, several months went by without it being installed in a locomotive either for myself or someone else. The Virginia Southern has a Proto 1000 F3A equipped with an older Soundtraxx LC sound decoder that was beginning to give problems. Remembering the TSU2 on hand, it was time to give this new decoder a try by replacing the older LC sound decoder.

The TSU2 Model TSU-PNP (which is a universal factory board replacement sound decoder suitable for use in many HO scale models such as those made by Atlas, Athearn, and Intermountain), part number 885013, was purchased for locomotives with EMD Prime Movers.

The TSU2 line of sound decoders has a number of features and improvements over the previous Tsunami (TSU1 for reference) and its “cousin” the Econami sound decoder that Soundtraxx released prior to the introduction of the TSU2 line of sound decoders. Many of the features can be found at the Soundtraxx web site at the following link:

http://www.soundtraxx.com/dsd/tsunami2/products/tsuPNP.php

Figure 1 shows what the TSU2 PNP decoder looks like. Anyone familiar with either the older TSU1 or the Econami PNP-style decoders may not immediately notice a difference in the look of the TSU2 PNP decoder. The most obvious difference that struck me is the TSU2 PNP decoders are blue versus the previous green circuit boards. However, that is just a cosmetic difference. The real difference is in the new and improved features Soundtraxx has introduced in this new decoder. Among the many new features are:

• 16-bit Digital Sound
• Over 50 Sound Effects with Selectable Reverb
• 6 Function Outputs (previously 4)
• Hyperdrive2 “Advanced Motor Control”
• Reactive Dynamic Digital Exhaust
• Multiple Prime Mover Sound Files
• Over 40 selectable air horns
• 13 selectable bells to chose

This is just a few of the new and/or improved features of the TSU2. There are many other new and improved features that space doesn’t allow listing in this review. A visit to the Soundtraxx web site will show additional features and comparisons to their previous sound decoders:


The features that really caught my eye were the multiple user-selectable prime mover sound files (a total of nine EMD prime movers on the decoder) that are built into the decoder, and the new Reactive Dynamic Digital Exhaust feature.
The prime movers can be selected in CV 123 and include:

- EMD 567 without Transition
- EMD 567 non turbo
- EMD 567 with turbo
- EMD Dual 567
- EMD 645 non turbo
- EMD 645 with turbo
- EMD Dual 645 with turbo
- EMD 710 with turbo
- EMD 710 GC3-T2

The Reactive Dynamic Digital Exhaust feature is new to the TSU2 line of Soundtraxx decoders and perhaps the feature that really drove my interest in trying out the TSU2. This is a feature whereby the decoder “senses” via BEMF settings the increase or decrease in load the locomotive is operating under, and automatically adjusts the prime mover notching (both up and down) as well as changing the “timber” of the exhaust sound to either represent the locomotive working harder to pull the train or represent the locomotive not working as hard or coasting. Train Control Systems (TCS) introduced a similar feature with their WOW line of sound decoders that they refer to as auto notching. LokSound has introduced Full Throttle technology to their sound decoder line, which allows the engineer to manually manipulate the throttle to reproduce similar sounds and effects. More on this in a minute.

I won’t go into the details of the installation here of the TSU2 PNP in the Proto 1000 F3A as it is fairly straightforward by removing the old decoder, fashioning a small styrene base to fit above the motor to insulate the TSU2 PNP from the metal motor case, taping the decoder to the styrene base using Kapton tape, replacing the 12 volt bulb (headlight) with a 3mm Golden White LED w/2k ohm resistor (yes, resistors are needed for LED’s on the TSU2 PNP), and attaching all wiring to the correct clearly marked tabs on the decoder (see Figure 1). I retained the speaker from the previous installation and it works well with the TSU2.

Once the TSU2 PNP was wired, the locomotive made a quick trip to the layout for a “test drive” to make sure the motor wires were connected correctly so that when “forward” was selected on the throttle, the F3A actually moved forward and the headlight worked appropriately. Thus proving all was well, the locomotive was buttoned up by installing the shell and couplers. Now for the fun – programming the decoder.

In my case, I now use JMRI Decoder Pro for all my decoder programming after years of resisting its use. (Yep, a Neanderthal at heart I am!!!) With all of the newer sound decoders now using “indexed” CVs to expand the programming options beyond the NMRA standard 256 CVs, programming with Decoder Pro makes all of this much easier than manual programming using a program track and throttle as I have in the past.

So, my first impressions and/or unbiased (possible for me???) thoughts on the TSU2? I’m mostly impressed with the TSU2 PNP. The motor control, right out of the box, is superb, much better than on the previous TSU1 decoders. Much like the Econami decoder, motor control is very smooth with little to no jerk when first cracking the throttle. I’m sure it could be made smoother but in my case I didn’t see where it was warranted.

Two things got my attention right at the get go. First, when the locomotive gets power, the prime mover starts up and is very, very loud!!! The stock setting for master volume, CV 128, has a default setting of 192. This default volume level is astoundingly high! After some adjusting of sound selections and levels the value of CV 128 chosen in my case is 60! And yes, it is still of good volume with this much reduction.

The other thing is the ringing of a bell, which sounds just like the bell in my high school to signify changing of classes. What a racket it is! Turns out this is the low oil pressure alarm bell that
Soundtraxx sets as defaulting to being activated during startup. Very annoying. Luckily, it can be disabled by adjusting CV 112. Who in the world thinks this is a good idea, I don’t know; so unless you want to be reminded of being late for high school Algebra, disable the alarm!!

Moving along, there are a variety of EMD sounds to choose from on the TSU2 decoder as previously mentioned. In my case, I chose the EMD 567 with transition, as most first generation EMDs were equipped, by setting CV 123 to a value of 1. I have long considered Soundtraxx as having the first generation EMD 567 sound nailed. To me it’s spot on to the prototype, superior to any other decoder manufacturer that I’ve heard. The bell selection is good and sounds better than on the TSU1 or Econami, but has no specific bell ring rate to select as on the TSU1 decoder. There are selections such as fast, fast-medium and slow-medium for EMD, Alco, GE etc., but not a specific user-selected ring rate. That said, however, the bell is adjustable and sounds good to me.

Horn selection is quite robust but, to me, the quality of horn sounds could be improved. This has long been my pet peeve with diesel sound decoders from Soundtraxx. The horn sound selection is good, but the competition’s sound quality is better nearly across the board … again, my opinion. BUT, Soundtraxx gives us both an Equalizer (CVs 225-232) and a Reverb (CV 233), and now has added “High-Pass Filter Cutoff Frequency” (CV 224). The latter is used to adjust the cutoff frequency of the decoder’s high-pass output filter. With three areas to adjust the sound quality, the horn sounds can be made more distinctive and representative to the competition and the prototype. All in all, these are really dynamic features and worth experimenting with to “tune the sound” to your liking.

Another less than “dynamic sound” is the dynamic brake sound. To me, this is not quite what I feel it should or could be, but I’m certainly no expert in that area especially for first generation diesel locomotives from the 1950s. It just sounds more like a noise rather than an “event” taking place. There are also more gimmick sounds and features that someone out there must want, but as my son often tells me, “Dad, you’re just not the target audience!” How true indeed.

There is one new feature I was particularly anxious to hear, and to learn how it worked and sounded. That is what Soundtraxx refers to as Reactive Dynamic Digital Exhaust or what I refer to as “load induced auto notching” of the prime mover. This feature is quite awesome, as is the similar effect in the TCS WOW decoder. HOWEVER, it takes a great deal of fiddling with CVs to “dial it in.” Much like my feelings about the TCS WOW decoder feature, the locomotive and decoder needs to be set to YOUR layout and operating characteristics. In other words, an installer 100 miles away isn’t likely to be able to tune these CVs to your environment with reliable results. I could be wrong on this, but it’s my feeling. Long and short of it, it took me about four hours over two days of adjusting CV values and testing to reach something I’m pleased with on my layout.

It’s too much to go into here, but there are a total of eight indexed CVs that need to be adjusted to tune this feature to work realistically. Some of the CV values settled on are way different than the default values for these CVs, but now when my F3A pulls a train and the curvature or grade changes, the decoder recognizes the added work effort needed and notches the prime mover up a notch or two as well as increases the timber of the exhaust as if the locomotive is working harder. Likewise, when the grade levels off or is going down grade, the decoder senses the change in effort required and the exhaust sound reduces in volume and notches back to an appropriate setting for the demands on the locomotive. When going down grade, the exhaust and prime mover sound as if the locomotive is coasting down the grade with just a slight rumble of exhaust sound.

As info, on the next page is a list of the eight CVs, the default values, and the values I chose.
Comparing the default values to the values I chose shows how far some of the CVs were adjusted to get the desired results for my F3A and layout characteristics. I imagine your values would be quite different still.

One last convenient feature to mention is the ease of adding a keep-alive module or Soundtraxx Current Keeper. Soundtraxx has provided a small two pin female plug on the decoder board, which is the white plug that can be seen near the center of Figure 2. This easily enables the end user to add a keep-alive module, such as the Soundtraxx Current Keeper, to the decoder as shown in Figure 3. This plug was introduced on the Econami PNP style decoders and is really handy for users that desire to add some capacitance to their locomotive to help get over those annoying dirty track situations or insulated frogs. This rates as a neat feature.

Bottom line, the TSU2 is a full-featured sound decoder offering the user a great deal of options and features of which this brief review only touches on a few of.

The TSU2 PNP is about $20 more than the Econami, and priced in range with the ESU LokSound Select and TCS WOW sound decoders; so about $85 versus $65 (so called street prices) for the Econami but with an abundance of features not available in the Econami or in some cases the competition in the sound decoders mentioned above. So, if you want some of the extra features of the TSU2 over the Econami, the extra fare is well worth the costs; but everyone will have to make this decision on their own.

Hopefully this short review will be of some value in making your next sound decoder purchase. Adding sound to your locomotive is like adding scenery to your layout ... it makes it come alive!