DCC Impulses - SoundTraxx' Econami DCC decoder

Model Railroad Hobbyist

DCC IMPULSES

column

BRUCE PETRARCA

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In July 2015, SoundTraxx announced their first new sound decoder series since the Tsunami debut about a decade ago, called the Econami. I briefly covered it at the end of my last column. This month's column is written after some folks have actually had Econamis in their hands and installed them.

The Econami is the first group in a whole new line of decoders from SoundTraxx. Obviously from the name and the price, it will be the low-end unit. Based on what the Econami delivers, I expect great things from their other offerings, as they are announced.

The Econamis are available in three versions (1-amp with wires [1], 1-amp with a 21-pin NMRA-compliant connector [7], and 4-amp with screw terminals [8]) with three sound variations (diesel, steam, electric) in each package. I'm not going to spend a lot space repeating what is on the SoundTraxx web site..

I got a sample from SoundTraxx of the ECO-100 1-amp wired models [1] in all three voices. These guys are small: 27 x 10,5 x 5 mm (that's 1.063 x 0.413 x 0.197 inches). They will make many of those tight installations easier to do, including N-scale ones. With a list price just under $80, these guys fit a tight budget, too.

The down side of the small size is that they don't have room for any connectors, so they must be hard-wired into the locomotive. Also, while they support external energy storage systems (like SoundTraxx' CurrentKeeper), that must be hard-wired, too. Point of note - the ECO-100 is smaller than the CurrentKeeper.

The package includes a 220 μF electrolytic capacitor to wire between the blue and yellow/green leads, reminiscent of the TSU-750 decoders. The CurrentKeeper can be wired here instead. Thus, you have three levels of energy storage: small (what's in the decoder), medium (external capacitor), or large (capacitor bank, like the CurrentKeeper).

At the normal street prices, you can get an ECO-100 decoder, a CurrentKeeper and a speaker out of a $100 bill and still have a bit left over to pay for shipping or tax.

1. One-amp wired version of the SoundTraxx Econami, the ECO-100.

Sound quality

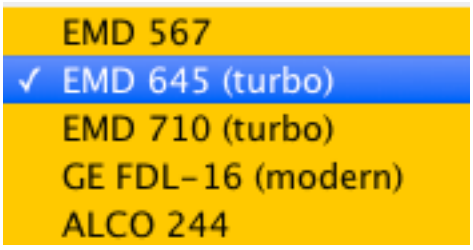
The first thing I wanted to do was listen to the raw audio quality of the Econami. I put a diesel version on the test bench and connected it to an eight-inch speaker in a public address baffle [2] that I have above my work bench. This speaker makes a lot of sound out of one watt of audio power and shows the cleanliness of the sound. I connected a motor and the DCC signal from my PowerCab.

I hadn't installed the steam version before the deadline for this column, so, I'll focus on the diesel version for now. Also, since I don't have different models to compare (ECO-400, 4-amp, for example), I'll cannot comment on sound differences between the versions. I can point out the specifications which show the sound power output varying between the models: 1 watt on the smallest decoder, 2 watts on the 21-pin version and 3 watts on the 4-amp version.

2. Eight-inch 8-ohm speaker in a public address wall baffle that I used for the initial sound quality test.

I was highly impressed with the sound as it came out of the bag. It was almost too loud with the efficient speaker that I was using, so I used DecoderPro (see notes later in this column) to reduce the general sound level and didn't adjust any specific sound volumes.

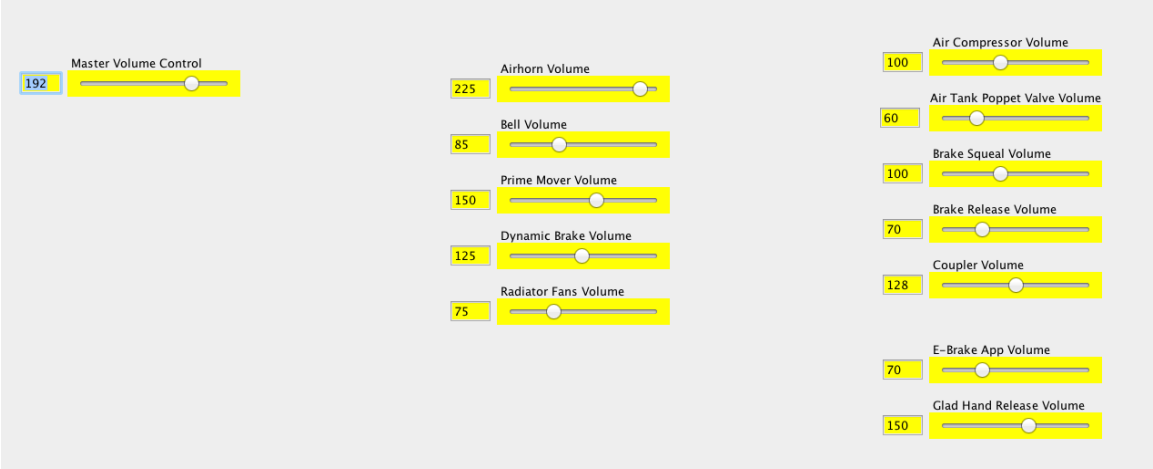
3. Decoder Pro selection screen for prime mover sounds



A simple change of CV allowed me to cycle through the prime mover choices [3]. While they are limited, they cover exactly, or are very close to, the majority of locos modeled. The default (CV123 = 0) is the EMD 567 non-turbo. I tried all the motors before settling on the EMD 645 turbo that my intended installation needed. Each motor had a different and, to my ear, accurate startup sound. The running sounds were clean and accurate, as were the shutdowns. Just what I expected.

Given the small size of the decoder, I expect additional models with sounds for locos like the GE 44-ton and 70-ton motors. It just seems right. Unless the flagship decoder is smaller.

4. The DecoderPro page for adjusting sound levels in the Econami decoder



There were a myriad of horns (16) and bells (7 with as many as 4 ring rates for some) available in the diesel package.

In summary, the decoders do a good job of delivering the sound quality that I heard on the 32-bit master tapes in SoundTraxx' editing studio.

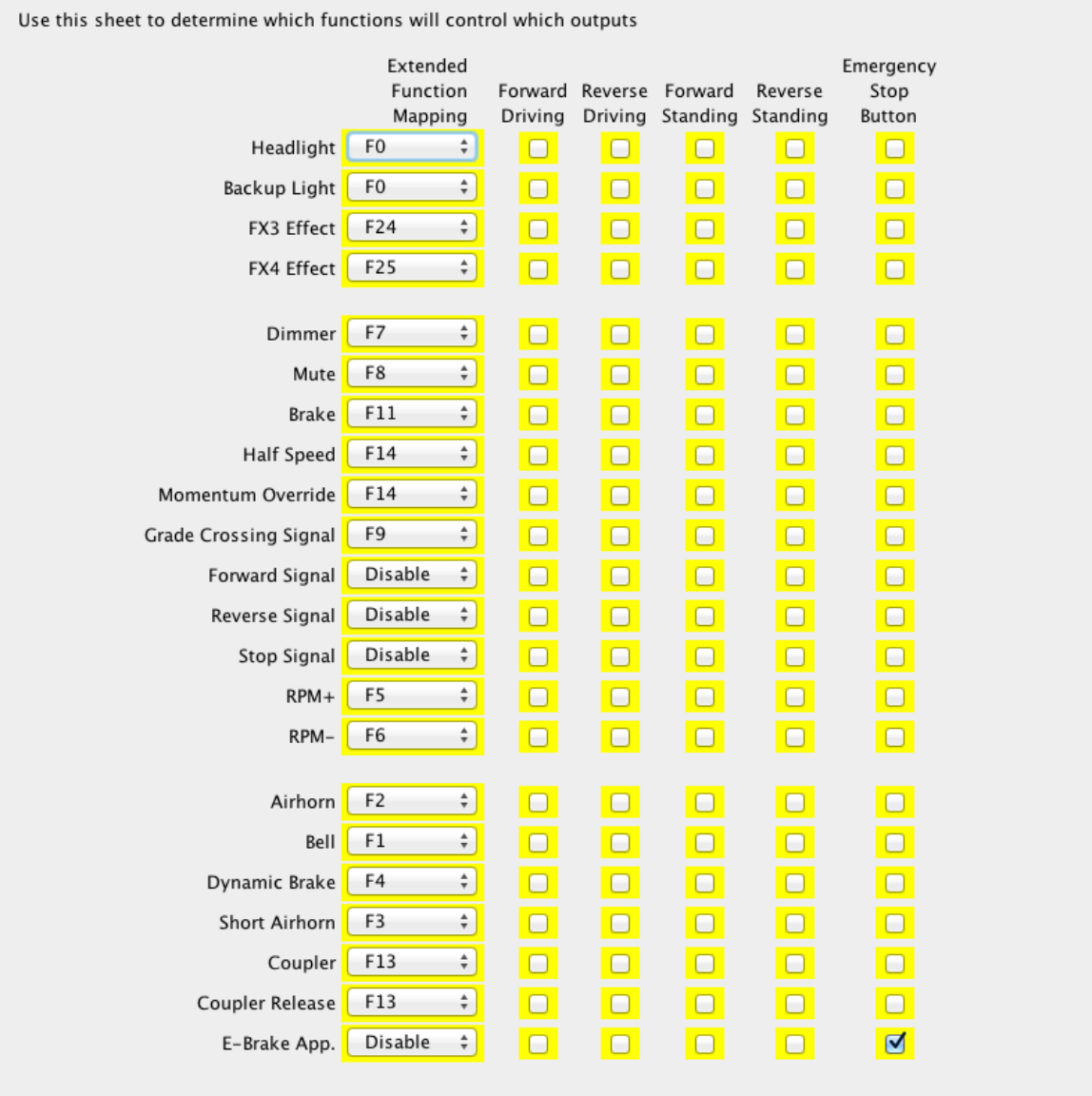
Remember, the sound quality will only be as good as the decoder can deliver and your acoustic design can support. This decoder can deliver. See my August 2012 column, ***How Do I Get The Sound Out?*** for more information on acoustic design.

DecoderPro support

The Econami introduces indexed CVs to the SoundTraxx stable for the first time. Indexed CVs can be very vexing, especially for first-time or casual users. Here is where DecoderPro (jmri.org/download/index.shtml) shines. You don't have to worry about what CV (or indexed CV) is needed, just select what you want and have it write the CVs and keep a copy on your computer.

Thanks to several folks in the JMRI community (Michael Mosher, Dave Heap and Alain Le Merchand), the test version (4.1.1) of JMRI issued on August 15, 2015 includes support for all released Econami models. That and all later versions (4.2 will be the next general release) will have what you need. Be aware, that versions of JMRI later than 4.0 will require Java version 1.8 or later. Java 1.8 says that it is not supported by Windows XP. I installed it on an XP machine and am running JMRI 4.1.1 just fine. Just forge ahead when it starts telling you that it won't work.

5. The Econami allows broad flexibility in function mapping

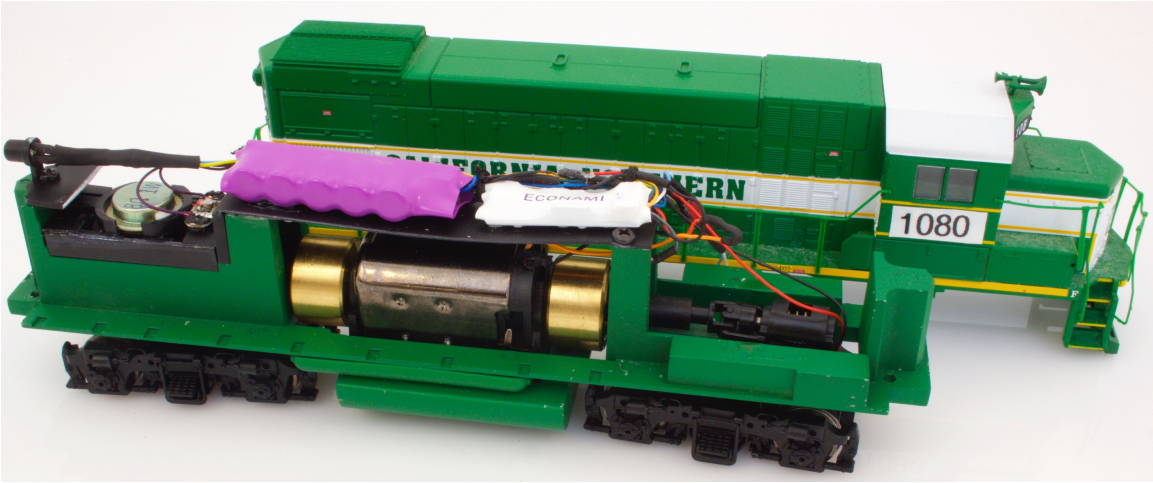


One look at the choices for sound levels [4] or function mapping [5] shows you why you need DecoderPro to tame the Econami.

Installation

Before the deadline for this column, I was able to install the diesel ECO-100 and a CurrentKeeper in a Walthers HO-scale GP15-1 [6]. Details and more photos are on my web site (**https://mr-dcc.com/index.php/dcc-info/installations/o-gauge**).

6. ECO-100 diesel and CurrentKeeper installed in a Walthers HO-scale GP15-1, using a 16 x 35 mm 8-ohm speaker in a baffle arrangement.



One area that also impressed me was the electrical efficiency of the decoder. When this locomotive was sitting on the track with the idling sounds running, my RRampMeter was showing 0.01 amps (10 mA of current) being consumed. This efficiency should translate into cooler running. The few that have been installed seem to confirm this.

Comments on the steam version

My friend, Mark Kasprowicz has been working with the steam version and has kindly agreed to having his remarks from the SoundTraxx Yahoo group included here.

About chuff sync, since there is no cam input: "The chuff sync is adjusted via CV113. It has a maximum setting of 127, my little HOn3 C-16 needed a setting of around 120, much higher than the recommended mid point of 57. But the wheels are small.

"It appears that the chuff sounds are being generated based motor revolutions, which may be the end of cams."

About the cylinder cock sound: "Pressing F4 starts a constant hiss, opening the throttle starts the chuffs which interrupt the hiss. That's OK as in real life steam will enter the cylinders and then be exhausted resulting in the chuff. So I just press F4 and straight away open the throttle. I think it sounds pretty much like the real McCoy."

About the electrical efficiency and CurrentKeeper: "The circuit is much more efficient - I'm getting 70% more stay alive with the motor and sound running than with the TSU, also I found that when the motor stopped the sound kept running for another five or six seconds."

About function remapping: "I just tried the new remapping feature and wanted to put the brake on F7, in common with my remapped TSU's So I input CV32 to 1 to enable the indexing on level one, punched in the Brake CV which is (1.)275 and then input the destination function key. Selected in this case 7, and it's there. Dead easy."

General comments: “These are loud and if you're going anywhere near the limit you need to ensure the speaker can take it. I use sugar cubes and reduced the volume to about half of the factory setting. Any more and the speaker started to 'square off', i.e. distort.

“Overall impression is brilliant! If this is a portent of the new TSU then bring it on.”

Motor control

One area of disappointment in the Tsunami line was the difficulty of getting the locomotive to creep when a Tsunami was installed.

I am happy to report that the Econami in the Walthers GP15-1 crept on speed step 1, out of the bag, with no tweaks. More installations will tell if this is due to their new "Hyperdrive 2" or just a stroke of luck.

SoundTraxx continues to stress the checking of stall current for its decoders. For example, they rate the ECO-100 for 1 amp motor stall current. This is not wheels slipping, but fully stopped.

Customization

Some of the sound customization features carry over from the Tsunami, some do not. There is no reverb, but the equalizer remains. Presumably the reverb will be part of a more expensive model.

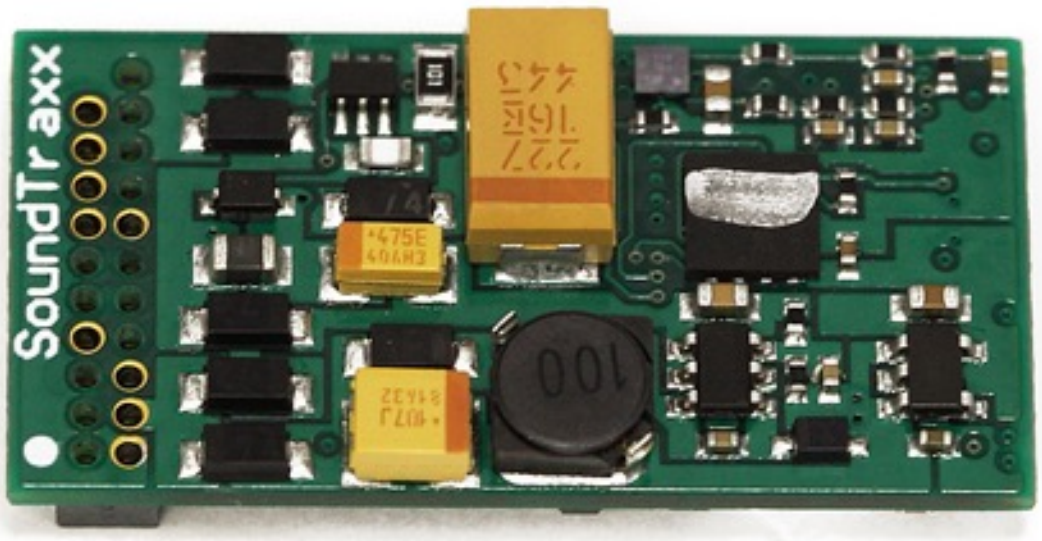
There are horn or whistle sequences available on a single function [5]: grade crossing signal (F9), forward start signal (off by default), reverse start signal (off by default), and stop signal (off by default).

The 3-step speed control is available using CVs 2, 5 and 6. For the more dedicated, the 28 step table is supported, too.

21-pin 1-amp version

While I didn't test any 21-pin decoders [7], I'm very happy to see them available. They have a bit more audio power (2 watts) and six function outputs. The power rating can be confusing: initial specs said 1-½ watts, but the units that are shipping actually put out 2 watts, per SoundTraxx. The function outputs are NMRA compliant. That means, unlike non-NMRA compliant decoders, all six functions are available to drive 100 mA loads without external circuitry.

7. ECO-21 - 21-pin connector version of the 1-amp model with a 2-watt amplifier.



The use of an adapter board, currently available from ESU, allows the decoder wiring to be done in the loco and then the decoder to be plugged in. This way all the connections go through one connector. I'd expect SoundTraxx to make an adapter board themselves soon.

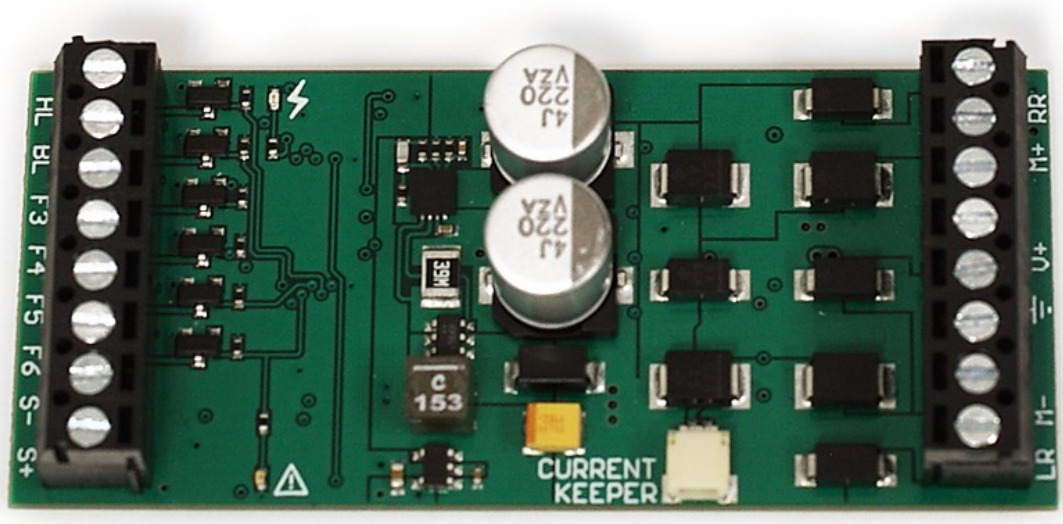
4-amp version

O-scale and some G-scale modelers will be happy to see a small, inexpensive ($150 list) decoder [8] available for their section of the hobby. I'm hoping to evaluate one soon.

It boasts 4-amp motor stall current, 6 function outputs and a 3 watt audio amplifier, all in keeping with the larger scales.

It also has a jack for direct connection of the CurrentKeeper. Given the amount of power that this decoder can deliver, will SoundTraxx give us an even larger version of the CurrentKeeper, say one with four times the amount of storage?

8. ECO-400 - 4-amp decoder with a 3 watt amplifier.



Folks always seem to have additional ideas to share. Just click on the Reader Feedback icon at the beginning or the end of the column. While you are there, I encourage you to rate the column. “Awesome” is always appreciated. Thanks.

Until next month, I wish you green boards in all your endeavors.

Mr. DCC's Workshop

My ideal throttle

When my copy editor was going over last month's column about DCC Throttles, he asked me what I thought would make an ideal throttle.

That is pretty easy to put into words. Making one might not be so easy.

Remember, I use a Digitrax UT4R and a NCE Cab06PR on a regular basis. Here's what I want in an operator's (potentiometer) throttle - it's a combination of the two with a few more features, all in the same size package, of course:

- A pot with more robust end stops than either throttle has;
- The option for "yard mode", like the NCE;
- A center off direction switch, like the Digitrax;
- The direction switch would change which direction is which when the throttle is used in "yard mode", so that, with a quick flip of the toggle switch the loco can be made to go in the direction that the pot is being turned;
- The ability to key in loco addresses, like the NCE;
- A display of loco number and direction, like the NCE;
- The ability to build and break consists that neither company has on their operator's throttles
- Direct access to functions 0 through 9, like the NCE
- Radio on / off control without having to remove or flip batteries, like the NCE

So, there's my wish list. You may want to voice a different opinion. Feel free to do so on the MRH web site under the blog for this column, by clicking on the link at the beginning or end of the column.