

Loksound Full Throttle: First Impressions

Bob #1 August 14, 2016, 2:38pm

ESU Loksound released new sound files and decoder firmware for their Select and V4 decoders called "Full Throttle." The main new feature is called "Drive Hold", perhaps more accurately described as speed lock. Pressing F9 disconnects motor speed from the throttle knob so that the operator can work the throttle notches without changing speed. This makes it easy to simulate coasting, running up a grade in run 8, and occasional throttle changes to maintain a constant speed. It won't, however, let you gradually slow down while running upgrade.

I loaded file 74401, an Alco 251 12 cylinder, into an RS-36 for evaluation during yesterday's work session. A few things required tweaking, mostly motor control parameters, and substituting a Leslie S3L horn which I preferred. Of course the engine was set up with quite a bit of momentum.

Everyone got a chance to run the new firmware. All present agreed that they really liked what Drive Hold does for more realistic operation. Mark observed that it made you think more like an engineer who needed to work the throttle. I liked it a *lot* better than "slot car mode."



One issue did come up. During preliminary testing, an out-of-the-box Atlas tank car twice picked the points of a switch, perhaps caused by an out of gage wheel set. The engine was running in Drive Hold. That's when the NCE ProCab's E-stop button saved my butt. The train stopped instantly, without needing to turn off Drive Hold then waiting for momentum to ramp down.

While the other 3 guys tried out the new feature, one individual did have to use the E-stop button after fumble-fingering another button on the throttle. I was glad I demonstrated E-stop before handing off the throttle.

It seems clear that it would be beneficial to re-program the option button on Cab04R throttles to E-stop. The factory default is a direction toggle, but that is redundant since the cab already has dedicated forward and reverse buttons. This would also assist a new operator who wasn't used to running an engine with momentum, or unintentionally turned on drive lock while exploring what the various function buttons do.

So... what if you don't have an NCE system? Not all vendors's throttles have an E-stop button. Frankly I would think twice about running a locomotive with Drive Lock using such a throttle.

The new firmware has 3 more features—independent brake, run8, and coast. The latter two by default don't map to any functions, and I personally don't see a need for them. Testing showed that the independent brake just changed the amount of momentum and would prevent an engine at stop from moving. It had no effect when in drive lock so there is still no way to slow down when running upgrade with drive lock on.

This brings me to a wish that ESU would add a “sound lock” button, a missing twin to drive lock. When turned on the throttle notch would be locked. Then, by turning off drive lock, speed could be increased or reduced without changing the sound.

One of the very helpful folks who frequently post to the Loksound group on Yahoo developed a variation of drive hold called momentum multiplier. By pressing a function button, you can instantly change between two values of momentum. This might be interesting in a switch engine to toggle between light engine moves and shoving a long cut of cars.

Drive lock alone adds a lot to operation, and it works just as well when running a consist of all-Loksound decoders. Certain other sound decoder brands sense back-EMF and automatically notch the throttle up and down. That's fine for a single diesel locomotive, but multiple sound-equipped engines running in consist won't all notch up and down in unison. That said, features like DDE do work well when running steam in consist. Well, maybe.

Some years ago I had the pleasure of sharing breakfast with one of the Cumbres & Toltec engineers. He said that when they double-head, the second engine usually pulls as hard as it can. The lead engineer works his throttle to regulate speed. So in this case DDE won't do “the right thing.”

1 Like

Bob #2 August 14, 2016, 5:35pm

A casual iPhone video at the start of Mark's run. Notice that he is able to modulate the throttle notch while maintaining a steady speed. Turn up the sound!

https://photos.smugmug.com/Trains/Model/Loksound-install-in-an-RS-36/i-WnrsG5g/0/1280/RS36_Movie_Trimmed-1280.mp4

1 Like

Frolin #3 August 14, 2016, 10:02pm

Bob, thanks for sharing, the info about the new LokSound files and your settings and test runs, plus the neat video clip. This is definitely well past the standard DCC sound loco setup and casual 'turn the knob' running.

Have been more on the operations side for years, but not until recently have been looking closer at both, the actual engine response (moving) in ratio to the throttle changes, plus closer sound matching. The recent MR article on programming a sound decoder to, let the motor sounds rev up before the loco starts to crawl, was nice. But actually having hand son experience was a game changer for me when first ran a GP9 setup as such, during an operation session.

BTW - as to the Emergency Stop feature, I have had EasyDCC for about 15 years now and the E-Stop is seldom used by so many, that CVP (EasyDCC) removed it from the system about 8 years ago. Problem was, it is a system wide effect and if one guy hits it (normally on accident) the layout stops and you had no way to tell why or who did it. Is it system wide on NCE or only to your loco?

Watching the video was neat too. Though gotta say, after re-reading your message, I got up and walked outside, and on my back porch I heard a more distinct sound today from a coming Southbound. Maybe was the damp air after a shower we just had, but was sure neat timing for a train to go by.

Not that train, but here is an example of trains "I run with DCC" from my back porch view (har har)
https://youtu.be/C8D4TWji_vw?list=PLEc1rqTnU7qv7RnRzXyppBo5vokBFV_cG

I'm in the process of cancelling a vacation trip to Denver, Silverton and Chama in two weeks, and had wondered about contacting you for visit options... if the A&O has any semi-planned Op Sessions or was gonna ask about a possible visit.

I have an OMI RS-11 I acquired a couple months, mentioned in previous post. Initial review shows the model is about 25 years old and appears to need a new motor, new drive system or work on it, plus paint job and DCC So wanted to talk about work you have done with yours and plans.

Hearing about the new LokSound files, reading about your test runs, and then the video, is good inspiration. Maybe you can get a video clip of it parked, started up, run up to yard speed and brakes to stop?

Frolin
Marek Mtn RR
San Antonio, Texas

Bob #4 August 15, 2016, 2:57am

Frolin -

On NCE a single press of E-stop only affects your locomotive. If you press it 3 times, the entire layout shuts down, and you will probably get feedback from fellow operators. Curiously, it also causes a shutdown sequence on Soundtraxx decoders.

Sorry to hear you need to cancel your trip. David is not yet holding operating sessions on the A&O as the mainline is still cut in 4 pieces.

There is a fellow on the modeltrainjournal forums by the name of Jay Criswell who has shared some nice work remotoring brass diesels. Some of his drive parts are available through Protocraft.

1 Like

David #5 August 15, 2016, 3:21am

Hi Frolin,

You are welcome to visit anytime. That happens here frequently. But until I/we get some necessary bridges in place the mainline remains segmented and op sessions still await. But we're getting close! Perhaps later this fall; we'll see.

You can be sure photos will abound as we draw near and achieve this goal. Completing the last of the rail laying was a big milestone accomplished yesterday, 8-13-16. Bridge-required scenery and continues this week.

Stay tuned. And yes, operating the RS-36 is a sensory rush, just like it video suggests.

David

Bob #6 August 15, 2016, 9:46pm

Frolin -

Here is a very short video snippet filmed for a future A&O employee training video. An unpaid actor demonstrates a situation in which it is appropriate to press the NCE ProCab E-stop button one time.



Just off camera to the right is the current end-of-track, at the start of the massive out-of-service Ohio

River Bridge. Notice the **instant halt** of the locomotive as it passes under the north signal bridge at CP Jackson.

With the NCE system a single press of E-stop brings **only this** train to a halt, the one controlled by the throttle issuing the E-stop. Normal DCC track power remains up and all other trains feel no effects.

<https://photos.smugmug.com/Trains/Model/Loksound-install-in-an-RS-36/i-4g66bSk/0/1280/E-stop-1280.mp4>

Only if you press E-stop 3 times in quick succession will you shut down the entire layout, not something that fellow operators would be likely to appreciate.

Bob #7 August 21, 2016, 1:47pm

Yesterday I brought over P&D AB F3s that formerly had NCE 408 motor decoders and old Soundtraxx DSX sound-only decoders. These engines were well liked on A&O 1.0, but it was time for an upgrade when one DSX lost its programming, playing engine sounds but no horn or bell.

Both now sport Loksound V4L decoders and the improvement is amazing. The recordings are extremely clear without any hint of distortion. Even better, now they sound like two separate engines instead of just a single decoder connected to two speakers, stereo instead of mono.

The Soundtraxx decoders always played the same sound file with precisely the same timing. That made the ABA set sound like a single mono recording, the cylinders in each engine firing at exactly the same time.

In LokProgrammer I changed the 567 engine in one decoder to play back 3% faster than the other. Voila! Stereo instead of mono. When I rework the third unit of this ABA set I'll program it to play back 3% slower.

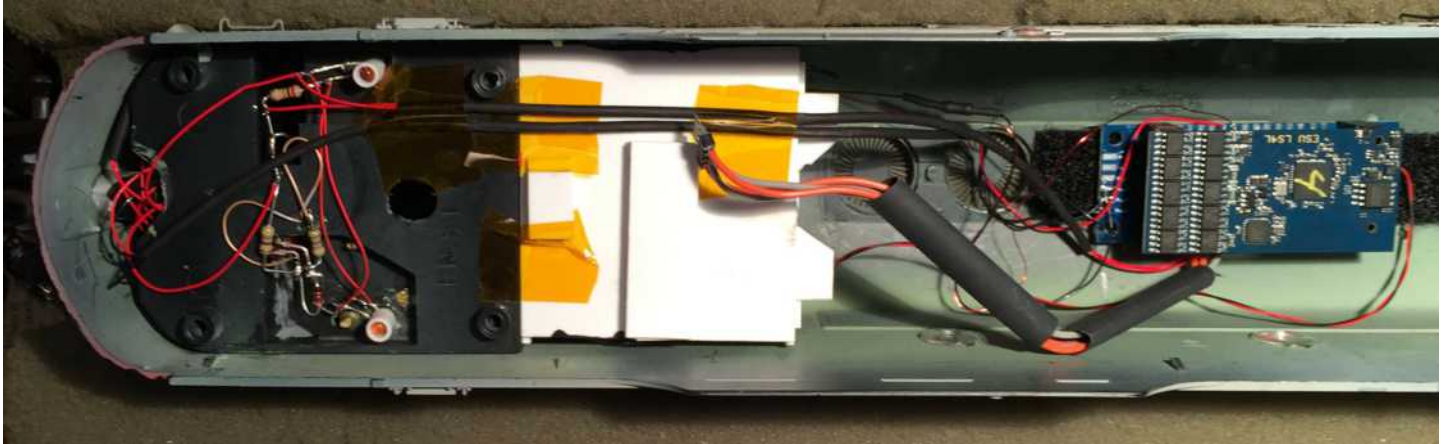
With FT decoders, all diesel engines in consist notch up and down in unison. We want that. Unfortunately that can never happen with certain other brands of decoders that automatically notch up and down according to the load sensed by back-EMF. Load sensing can work reasonably well in a steam decoder, but it would be a disaster in a diesel consist.

One more thing—regarding E-stop and pressing it 3 times to shut down the entire layout, that can be disabled in the command station. So no worries!

Bob #8 August 21, 2016, 2:06pm

Here's a peek inside the A unit. The white box is the enclosure for a 1.77" high-bass speaker, installed earlier this year. Sound escapes through etched chicken wire grills on the sides behind the cab and also upward through dynamic brake exhaust grills.

The only place I could fit the decoder was suspended from the roof, above the drive train but to the rear of the motor. Unfortunately, the decoder and wiring board are very tall, which can make installation problematic.



The tangle of resistors under the cab dates back to 2001. I gutted the old wires, which often interfered with proper fit of the car body on the chassis, replacing them with thin 32 AWG stranded teflon-coated wire.

1 Like

Frolin #9 August 21, 2016, 2:42pm

Bob, good info!

As to the Soundtraxx compared to LokSound, have you played with any of the new Tsunami 2 models?

Just curious, as compared to first series Tsunami or the 2nd series Econami models.

For reference, looks like price loosely is \$125 for 3amp re-programmable LokSound, to \$89 for 2amp pre-programmed Tsunami 2.

Note on Tsunami models, the TSU model has the wires hanging out vs the PNP model gives you tabs to wire to directly for \$12 less, is the same circuit and features just different board format, according to SoundTraxx - FYI.

Plus I hear/read LokSound is or has just released newer improved sound files. You had me searching

for a "V4L" model... Think on their website it's called LokSound L V4 but on the board in picture says LS4L...

<http://www.esu.eu/en/products/loksound/loksound-l-select-loksound-l-v40>

I guess the other two similar brands are QSI and Zimo, for programmable models.

I have played with Phoenix in large scale for many years, that was the first programmable sound file model on the market, but they never stepped up to full DCC with motor control.

Frolin

Bob #10 August 21, 2016, 6:44pm

Frolin -

I have not personally tested a Tsunami 2. That DDE can not synchronize throttle notch changes of all locomotives running in consist is hopefully fairly obvious to the casual observer. Even "identical" locomotives with the same drive train often require differing drive setups when run in consist. It wouldn't do for one engine to throttle up then have another in consist throttle up a few seconds later, or even never. This feature is perhaps best reserved for a single locomotive or in HO/N where it is sometimes common to equip only one consisted locomotive with sound.

I'm sorry for saying so, but because you opened that door, frankly the Tsunami 2 sample files on the Soundtraxx web site sound muffled and distorted to me, *especially* the horns. Distorted horns was a big turnoff with the Tsunami 1. A few of the earlier 8-bit DSX horns, particularly the Nathan M3, sounded cleaner than on the Tsunami 1.

Since Matt Herman joined ESU USA he's been *very* busy producing new sound files for US diesel locomotives. These new files are both more diverse and *very* cleanly recorded. For example, there are now FT non-turbo 567 files for 6, 12 and 16 cylinder locomotives, suitable for use in SW1, SW9, and GP9 or F units respectively. A few weeks ago an 8 cylinder SW8 was recorded in Portola. It is now far easier to get a well-recorded sound file that more closely matches a particular locomotive.

I have stood next to a 6-cylinder SW1 switching in Johnstown, CO and 16-cylinder GP7s switching in Fort Collins. They sound *completely* different.

May I suggest listening to the 16 cylinder 567 sample files on both the Soundtraxx and ESU web sites? Compare the ESU file 76411 for a 567BC against the Soundtraxx EMD 567 non-turbo. Form your own opinion. By the way, the engine that Soundtraxx recorded for that non-turbo file has a distinctive mechanical problem. I wouldn't want to hear that coming from every engine of an ABBA consist. And definitely not all tapping n-synch!

Soundtraxx EMD sound samples ESU V4 US locomotive sound files

Next listen to ESU's EMD 567 16, 12 and 6 cylinder files. In the future expect to see a new 8 cylinder file from Portola. With Tsunami 2 you only get 16 cylinders. Hear any significant differences? I knew you would.

Finally, consider that ESU lets you easily tweak engine sound speed so that engines in consist sound like stereo instead of mono. For me, choosing ESU for diesels is a no-brainer.

ESU has two versions of the L decoder. One is V4 and the other Select. Both are identical in operation. The more expensive V4's firmware allows you to modify the sound schedule (i.e., what sound it plays and when, even to the point of adding your own.)

Bob #11 August 25, 2016, 11:58pm

Here is another "temporary" install, this time in an early-production (the model is quite old) AtlasO SW9. I say temporary because this unit will be completely stripped and re-detailed prior to receiving an A&O paint job. For example, notice the incredibly oversize yellow grab irons on the hood. Details like these *must* go!

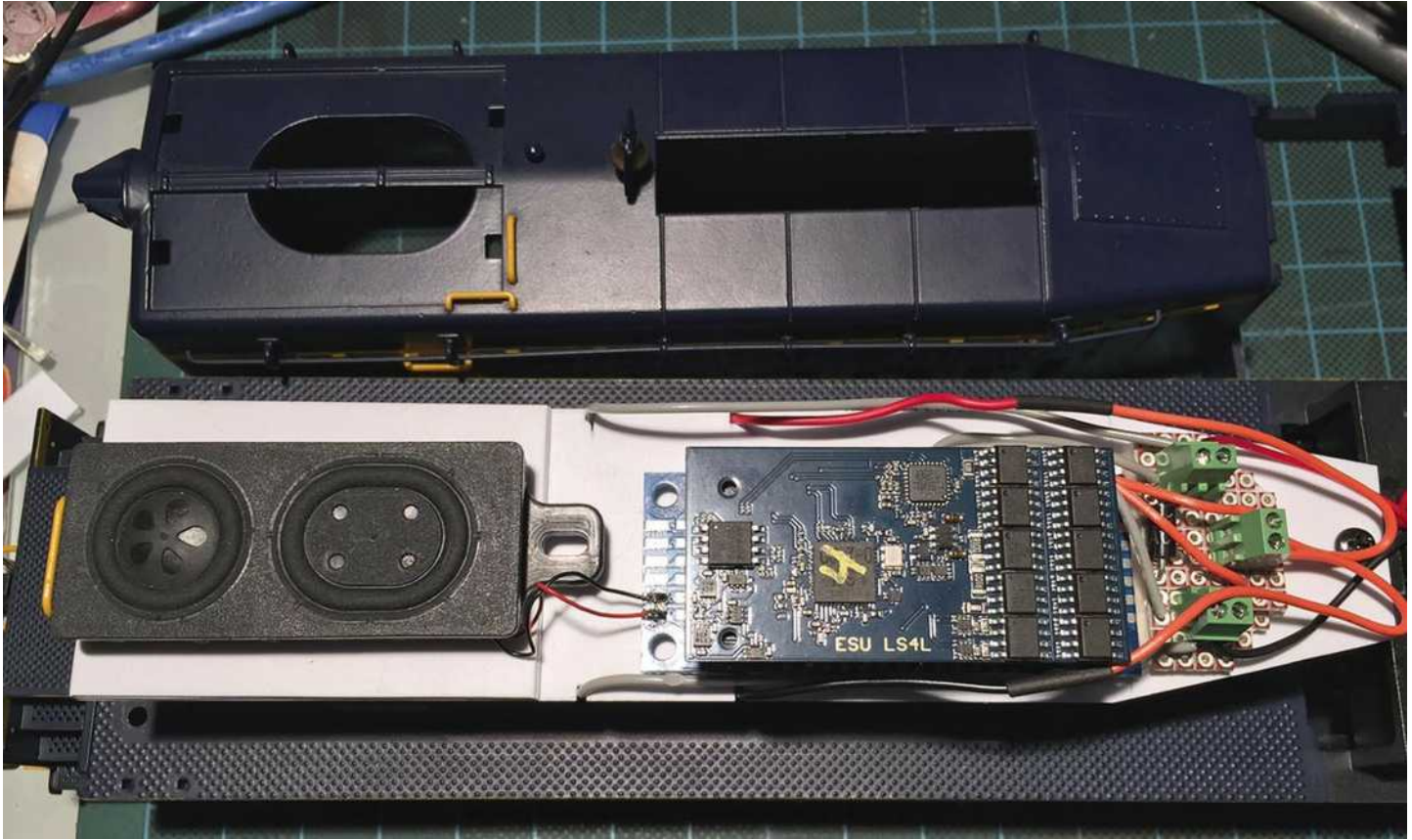
Originally I wanted to try the HO-sized Loksound decoder rated for 1.1 A continuous. Unfortunately at 12 volts and in wheel slip it drew 1.4A. A friend inquired of Matt Hermon of ESU USA and learned that this has been tried and the HO decoder failed. Rats.

At first it did not appear that the L decoder would fit but it did. For a speaker I chose a Tang Band T0-2008S module. This is a little brother of the 1925S installed in my RS-36. The oval passive radiator extends bass down to about 200 Hz. Both, by the way, are 4 Ohms.



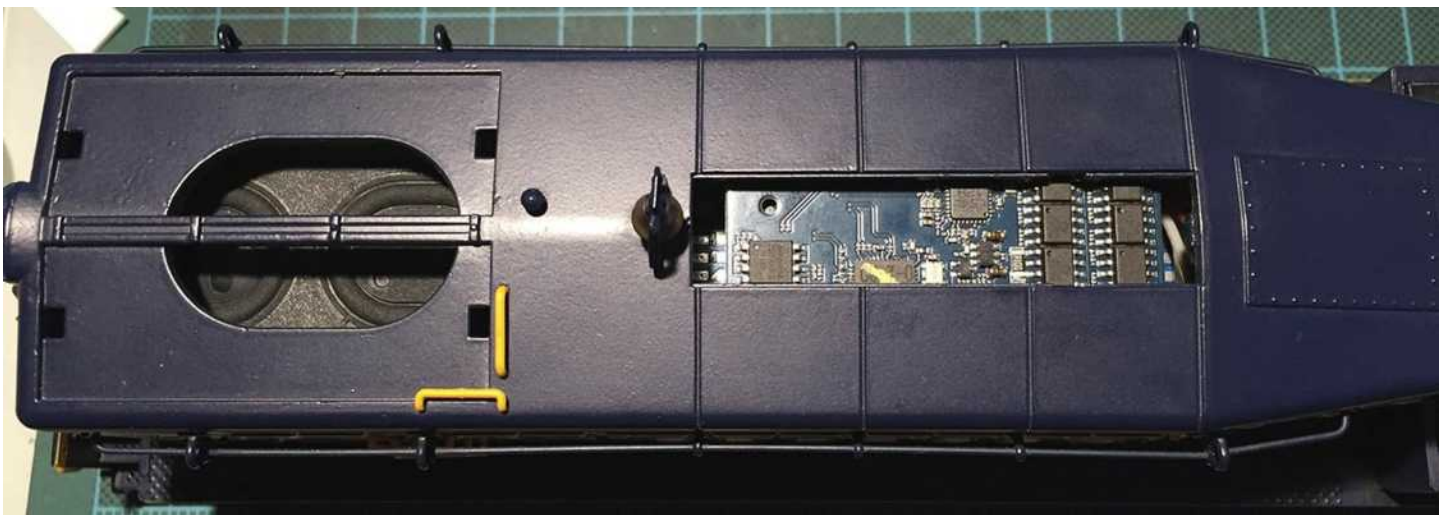
A styrene shelf suspends between two threaded mounting tabs. The leftmost mounting screw is hidden under the speaker module. Extra thicknesses of styrene permit the screw head to be flush with the top of the shelf. To get a better speaker location underneath the radiator, cut off the speaker's leftmost mounting ear.

A small board on the far right adds screw terminals to make removal of this shelf a lot easier. This will be necessary for painting and detailing. Since the prototype SW9s had 12-cylinder 567 engines, I loaded ESU sound file 74460 into the decoder and changed the horn to a Leslie A-125. Because LEDs will replace the stock incandescent headlight bulbs, I did not bother to connect them at this time.



Sliding the shell back on reveals good clearance between the radiator opening and the speaker. When detailing I plan to mill out the entire radiator area on each side of the hood to reveal a scratch built radiator core with an acoustically-transparent bottom.

The decoder almost hits the cast metal shell. Just for extra insurance against short circuits I covered the inside top of the shell with Kapton tape.



Bob #12 August 28, 2016, 3:50pm

Here's a short iPhone near-field audio recording of the SW9.

<https://photos.smugmug.com/Trains/Model/Detailing-an-AtlasO-SW1200-for/i-MW5mvNS/0/320/SW9%20Movie-320.mp4>

Bob #13 August 28, 2016, 6:39pm

My ABA set of F3s also received Loksound L V4 decoders. A very nice feature is the ability to change the playback speed of the prime mover a few percent in each engine so that they sound like separate engines in full stereo instead of all in-sync mono as they did with older Soundtraxx DSX decoders.

Here they grind up the ruling grade in run 8 between Glenn Forge and Jackson. Drive Hold is turned on.

Sorry for the shaky video. I had a throttle in one hand and iPhone in the other.

<https://photos.smugmug.com/Trains/Model/PandD-F3s/i-D7wrpDw/0/1280/Run8%201280-1280.mp4>

Bob #14 September 8, 2016, 5:38pm

The 1.77" high-bass speaker in the lead unit is, sorry to say, lacking in bass response. You may hear that in the video. The B unit has a 2.07" high-bass speaker, no longer available, in a huge enclosure. These speakers like large enclosures. The trailing unit also has the same 2.07" speaker, not as much bass response, but quite a bit better than the lead unit. When I get "a round to-it" the lead unit, or all 3, will receive new speakers, probably sporting Tang Band 1931 drivers.

Regardless, the Loksound L V4 replacements in each F3 from a dual decoder install, a Soundtraxx DSX sound and NCE 408 motor decoder, are quite successful.

Bob #16 September 8, 2016, 7:41pm

An update concerning the SW9 install.

TB 2008 distortion limits

The TB 2008S module is only rated at 1/2 watt. The driver has a limited cone excursion that it is happy to hit on low bass notes when driven by a Loksound V4 decoder at 100% volume. Larry Hanlon suggested in a private email discussion to install a series non-polarized capacitor to roll off the bass response. I may investigate this. For now I'm cutting the volume. Noise from multiple engines can annoy those who operate a yard.

Big momentum not right in a switcher

After running the SW9 to switch cars in a yard, Drive Hold and a lot of momentum don't feel right in a switcher. When running light the locomotive should come quickly up to speed in a low throttle notch. This means first of all changing the speed curve from linear to one of the logarithmic ones so that a much higher speed can be achieved while in a fairly low throttle notch.

One of the folks on the Loksound Yahoo group developed a very clever variation of Drive Hold that he calls **Momentum Multiplier**. This allows us to quickly change between very low momentum, as when running light, then after coupling to a cut of cars increase momentum by the press of a throttle button.

The decoder does this trick by turning Drive Hold on for a long time then off for a short time. The ratio of the two times determines the momentum multiplier in play. Installing Momentum Multiplier and adjusting the multiplier ratio both require a V4 decoder and Lokprogrammer hardware. It can't be done in a Select because editing the sound schedule is locked out in the public version of Lokprogrammer. Nor can it be done in JMRI.

Finally, for those wishing to consist locomotives outfitted with other decoders, whether from other manufacturers, or even the Lokpilot (motor only) decoders, Drive Hold and its offshoots are not compatible when the new features are turned on. Left off, the Loksound decoders can work well in consist with other brands when properly speed matched. However, Drive Hold would only be understood by a locomotive with a suitably-programmed Loksound decoder.

Frolin #17 October 14, 2016, 10:54pm

Bob,
Somewhere I questioned which LokSound decoder model you were using now, in the 'L' series, but can't find that message in threads, so...
Are you using a Loksound L "Select" or the "v4.0" model? And which and why ?

Looking at the specs and gather the difference in the Select verses the V4.0 is that on the Select, you can load only 'select' sound files and you can not customize how the different sounds and tracks play, they are as is from the factory file.

With the V4.0 you can load v4.0 files, (maybe Select to?), but in v4.0 you can customize the different sounds more...

Ok in the big picture, when we talk about say your Alco RS-11 diesel, and loading up an Alco 251hp prime mover file, you can select which horn, which bell, and such from a list. You can select air pops random or at times. So what else unique can you do with the V4.0 and is it really needed that much, for general users?

My source say its about \$110 for a Select and \$140 for v4.0, only \$30-\$35 difference. But for what?

And last... again, which one are you using and why?

Frolin

Bob #18 October 15, 2016, 1:47pm

Hi, Frolin—

Great to hear from you again.

Lately I'm installing primarily the L V4 series for its greater motor current rating, in all locomotives except for brass Car & Locomotive Shop Alcos that have very low stall-current Pittman motors.

Why V4 instead of Select? Certainly the Select is less expensive, and I do *not* enjoy paying any more than necessary. The V4 and Select PC boards and circuitry are, as far as I can tell, identical except for small differences in factory programming of the microprocessor that allow each to self-identify according to type, when it wakes up, and to allow the V4 to allow receive programming operations that a Select will not. There are also corresponding software rules coded in the LokProgrammer software to allow or prevent operations with the handling of V4 and Select files.

My reasons for using V4 decoders:

1. The V4 model allows me to transplant sounds from one file to another. So far I'm primarily using that to cherry-pick certain horns I particularly like. However, there are also some new sound files that have composite brake shoes that would not be used in certain locomotives in the A&O era; these would be steel, which often loudly squeal during a stop. Doing this requires a LokProgrammer.
2. With the V4 I can edit what is called the "sound schedule." That's more than just what collection of sounds comprise a horn or a prime mover. The sound schedule is really a form of computer programming that determines how sounds are played. The new Full Throttle features are implemented in the sound schedule. A variant, not designed by ESU, has been dubbed

“Momentum Multiplier.” Instead of an on/off “Drive Hold” a/k/a “Speed Lock” function, the Momentum Multiplier can instantly switch between low momentum (as for light engine moves) to heavy momentum (pulling a long cut of cars.) A good friend has also been experimenting with ways to automatically turn on Drive Hold and turn it off again.

3. Another way I could edit the sound schedule in a useful way would be to stagger the starting of prime movers in my ABA F3 consist. By adding a timing delay between engine starts, I could allow (fast) time for the hostler to walk (or run) from one unit to the next to fire them up. I’ve filmed inside a real F3 as a mechanic prepped and started it up. It was a fascinating but not very speedy process!

With either the V4 *or Select*, you can tweak the playback speed of the prime mover in each locomotive by a few percent. Why bother? Because when you run two “identical” engines in consist, you don’t want the consist to sound like one decoder driving 2 speakers in monaural sound. You want to hear stereo. The latter is not currently possible with Soundtraxx Tsunami 2s, as far as I can tell.

So far I’ve encountered a few minor bugs, and one **giant** one. CV 122.1 set to 1 should force a decoder to return to the same motor speed as it was running prior to a loss of power (can you say dirty track or wheels?) But it doesn’t. When running engines in a consist, if Drive Hold is enabled, any locomotive that experiences a power loss recovers but moves only very slowly. Then other engines in the consist try to slide it along the rails, if they can. This bug has been reported to ESU and they are looking into it.

Frolin #19 October 20, 2016, 4:51am

Bob, thanks for the very good reply to explain the LokSound L V4 vs the LokSound L Select decoders. While just \$30 to \$40 higher, it seems that if you get in to advanced sound programming, you gotta get the V4. Where for the good sound and standard selection options, the Select is nice also.

About to move forward with my OMI RS-11 project and thanks to your posts and details, I’m going with a LokSound L decoder.

Two last questions...

- have you used or found need for a ‘current keeper’ on these brass O scale diesels?
- are you wiring to the pins, or using the included adapter board (which means needing more room)

Frolin

Bob #20 October 20, 2016, 1:05pm

Frolin -

Current keepers can be helpful. So far I've only installed one, in an Atlas SW9 switcher. You can use anybody's current keeper, but unless you use the 3-wire ESU one you will need to disconnect it for programming because it will interfere with reading back from the decoder. At the moment (fall 2016) I'm holding off on purchases because ESU has announced a beefier but larger unit that stores more energy.

I don't wire to the pins. The L decoder is annoyingly tall, but so far it has shoehorned into the few installs that I've done. I know there isn't a lot of room in the Overland RS11 due to the simulated engine and silly rotating fan. Whenever I get around to removing a ~13 year old install of an NCE 408 and Soundtraxx DSX decoder, the fan assembly will come out. I'll make a more prototypical 3-bladed fan that doesn't rotate. The engine was removed during the original install to make room for a decoder mounted above the motor.

Also when I rewire and paint the RS11 I will likely seal shut the hinged access hatches along the roof line, since all they seem to do is fall inside during handling.

The speaker will need to mount close to the roof so that it fires upwards through the round radiator screen on the top of the hood.

1 Like

Russell_Idaho_USA #21 December 17, 2016, 3:10am

Thanks so much for this discussion, I am planning my future sound and control system now and you brought up some very valid reasons to go for the best professional solution. I plan on using BPR/C (Dead Rail) but will wire the sectional layout for DC/DCC for visitors. Some about my start last spring is here:

[\[http://ngdiscussion.net/phorum/read.php?1,313344\]](http://ngdiscussion.net/phorum/read.php?1,313344)(Sumpter Valley Railroad track layout for a model railroad)

I am actually designing my own 'home-brew' DCC system based on Arduinos It was already designed by others but I am wanting to figure out a way to add properly synchronized sound to it. But the important details to the sound you bring up here may be something I can't do in my home-brew system...

ErikLindgren #22 January 12, 2017, 1:46pm

They sound magnificent. I was not sure how to explain how much better these sound than any other models I've seen or run before. After reading your articles I am engaged. This is so fascinating. I normally don't care for the sound systems in the toys; Bob you made the sound system on par with fine scale model nature these are. Extraordinary

jonny #23 February 3, 2017, 8:19pm

I could not agree with you more... Tsunami I horns were awful in my opinion. I have tried Tsunami II and they are better, but not as good as the latest offerings from ESU, QSI, or TCS. The auto notching features that TCS and Soundtraxx offer are neat if you run single engines, but fall apart for the reasons you point out during consist.

We vacation in Spooner, WI every summer where we ride the Wisconsin Great Northern railroad. They typically run an SW1 or occasionally an F unit. The two engines sound distinctly different. I was very happy when ESU began offering all of the different 567 variations. ESU LokSound is the best option out there currently in my opinion. I just wish they would change over to screw terminals instead of solder pads on the 'L' but that's just a personal preference.

Jonathan