

Tsunami DCC Sound Installation into an Atlas ALCO RS-1

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December 2022

Even though I am a Rio Grande fan through and through, I have a soft spot for the New York Central, the railroad which dominated my childhood home of Rochester NY. And I have a real soft spot for NYC ALCO RS-1 diesel locomotives, the ones that routinely switched at Charlotte, within earshot and bike riding distance from my house. And NYC #8110 is the favorite – it's the loco where I had my first cab ride. Years ago, I bought an Atlas RS-1 at a train show, painted in Central of New Jersey livery, and shortly thereafter, I repainted it in NYC black and decaled it for #8110. It's been a good runner, but until I tackled this project in 2015, it ran only on DC.

I've installed DCC Tsunami sound decoders in a half dozen standard gauge diesels now, and two narrow gauge brass locos. This was one of the easiest installations I ever did. I did not need to take a hacksaw to the loco weight/frame, or go to great lengths to cram all the components under the loco shell. It runs well, and there's no sound quite like an old Alco! Thank goodness this one doesn't belch smoke like the real thing.



Photo 1. The finished decoder installation in the HO scale RS-1 NYC #8110 – the loco of my first cab ride.

Planning the installation and removing the shell: I began the installation by first removing the loco handrails and then the shell, which fortunately was easier than a lot of locos nowadays. Using a volt-ammeter, I measured the current draw when free-running and when held in place (stalled); both were well under the one amp maximum for the Tsunami decoder. Good news – no need to remotor the loco. I disconnected the wires to the lightboard and removed it and the 12 volt lamp. Next, using the ohmmeter, I confirmed that the motor was electrically isolated from the frame – a necessity with any DCC installation. Another bit of good news.

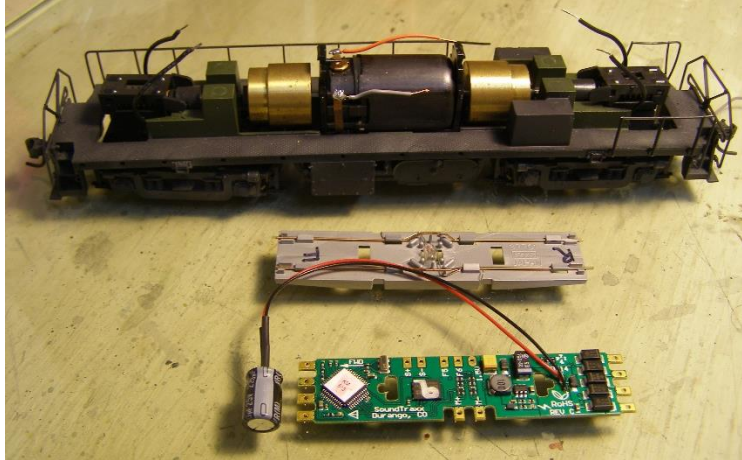


Photo 2. The shell has been removed, along with the light board (center), and the factory wires have been disconnected. The Tsunami decoder with attached capacitor is at the bottom.

Wiring the decoder. Following the color coding for decoders, I soldered 30 ga. orange & grey wires to the + and – contacts on the motor and to the decoder. Next, I soldered the wires from the trucks to the proper decoder contacts (one wire was too short, so I replaced it with a new longer wire). At this point, I powered the loco on my test track, leaving the loco address unchanged as 3, and confirmed that loco runs OK in forward & reverse and in proper direction (long hood = front). The rest of the wiring and the programming will be completed later.

Adding sounds and lights. For this locomotive, I selected an oval Soundtraxx speaker #810113, which just fits inside the short hood. For the speaker to project sound, it needs to fit into an airtight enclosure, which I constructed out of 0.020" styrene (sides) and 0.040" (back). After checking that the enclosure will fit into the short hood. The speaker was temporarily wired to decoder with 30 ga. wire to confirm that the sound was OK. The speaker was then glued, filling any gaps, into the enclosure to make it airtight.

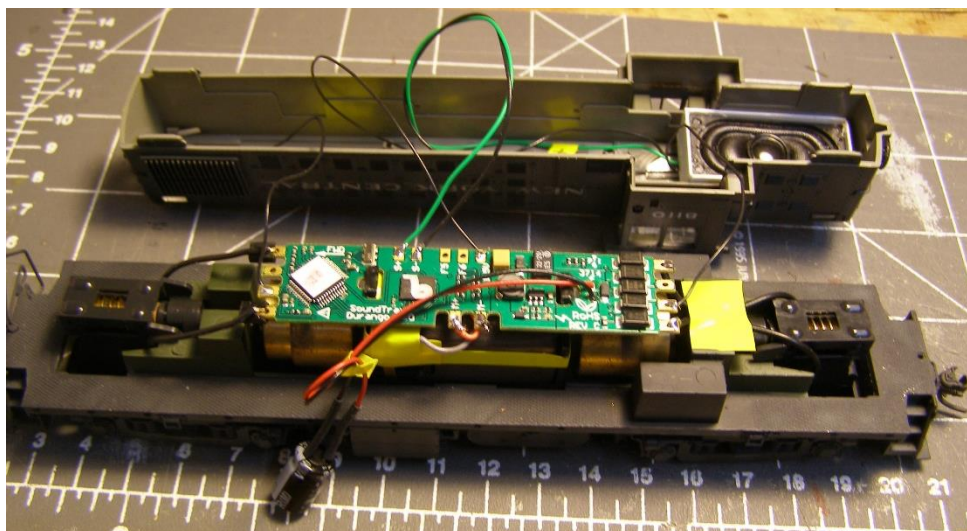


Photo 3. The decoder has been installed using the snap-in mounts. The oval speaker in its enclosure just fits in the short hood, facing downward. The directional lights are next.

The factory-installed lights were not directional; they used a single bulb with plastic light pipes directing the light to the ends of the hoods. To make lights directional, adding a second bulb and modification of the light pipes were required. Using a jeweler's saw, I cut the end of the light pipes about 1-2 mm from squared end (lens). Using a small rat-tail file, I filed a groove across the fresh cut to hold the 1.7mm bulb. The cut end was smoothed out with a drop of MEK and was allowed to evaporate. Then using ACC, I glued the lamp in the center of the smoothed groove.

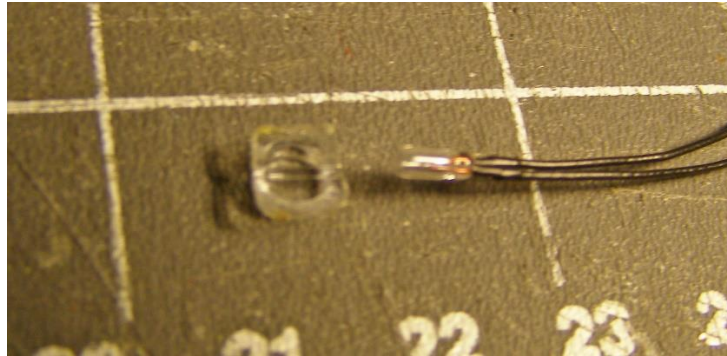
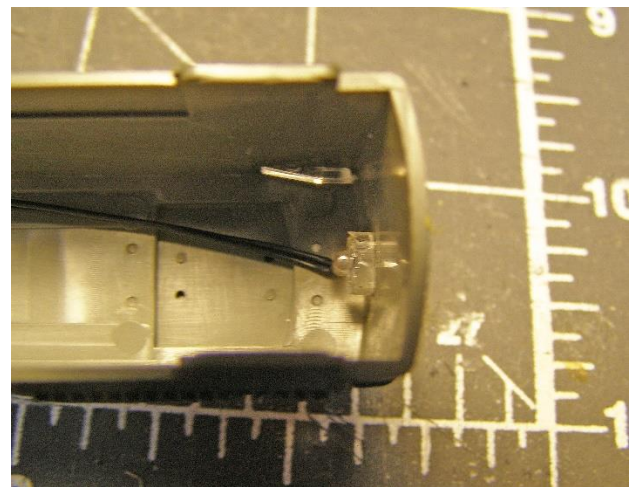
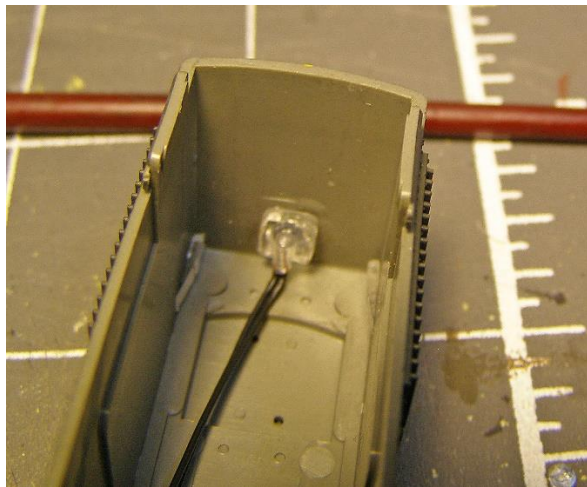


Photo 4. On the left, the light pipe has been cut, and a groove filed close to the lens, to form the new headlight. On the right, the bulb. The next step is to glue the bulb to the headlight lens in the groove.

The lamp leads were bent, the headlight lens was inserted into the hole in the shell, and was glued with ACC in place. Wire the lights with a common, connected to 1.5V output terminal on decoder. Confirm lights function properly on the test track.



Photos 5a and 5b. The new headlight assembly has been glued into the shell using ACC.

Final Assembly and Programming. I confirmed that the speaker still fit in the short hood after the headlight has been installed, then I attached it to the shell, facing downward, using double-sided sticky foam. The remaining wires for the speaker and lights were soldered to the decoder. After one last confirmation that the loco speed, direction, lights and sounds all functioned properly, I stuffed all the wires inside shell and snapped the shell back into the frame. The handrails were reattached.

I put the loco on my programming track and changed the loco's long address to 8110.

Parts Soundtraxx Tsunami TSU-AT1000 #828049, ALCO 539T
 Soundtraxx speaker #810113, 35 x 16 mm
 Miniatronics clear lamps, #1870110 (1.5V, 40mA, 1.7mm diameter)

References DCC Projects & Applications, Vol 2 (Kalmbach Books), p.32
 Mr DCC University, Tsunami install into RS-1
 <http://mrdccu.com/install/hods/Atlas-RS1-828043>
 Soundtraxx Application Note Atlas RS-3