SOUNDTRAXX™

New Dimensions in Digital Sound Technology

APPLICATION NOTE

Kato General Electric AC4400CW Locomotive

Digital Sound Decoder Installation Notes

Overview

This application note describes how to install a DSD-AT100LC Digital Sound Decoder into the Kato AC4400CW Locomotive. All of the sound components will be installed inside the powered locomotive; no dummy unit is necessary.

No major mechanical modifications are needed and the entire installation can be completed within a couple of hours.

Bill of Materials

Stock No.	Description
820043	DSD-AT100LC Digital Sound Decoder
810054	1" Speaker
810119	1" Speaker Gasket (Pack of 4)
	Rosin Core Solder
	1-1/2" x 3" x 0.040" Styrene Sheet
	Double-sided Foam Tape
	Two 1000 (1K)-ohm 1/4 watt resistors

Tools You Will Need

- X-acto Knife with #11 Blade
- 25W Solder Iron
- Miniature Screwdriver Set
- Pin Vise or Electric Drill Motor
- 1/8" Drill Bit
- Wire Cutters
- Wire Strippers
- Heat Gun
- Permanent Marker

Installation

1. First remove the couplers by removing the coupler screws and pulling the couplers from the coupler pocket. Set aside the screws and couplers in a safe place.

2. Remove the body shell from the locomotive chassis by gently squeezing the sides of the body inward, then lifting. See Photo 1.

3. Note the orientation of the factory installed LEDs in relation to the light pipes for headlight and backup light. You will need to remember how the LEDs are placed so that you can duplicate this positioning when they are reinstalled on the the Digital Sound Decoder.

4. Use a permanent marker to label the front and rear of the chassis for future reference. A simple 'F' marked on the inner part of the chassis casting should suffice.

5. Gently lift the walkway and ditch light assembly up and away from the chassis. This should lift away with very little effort (Photo 2).

Photo 1

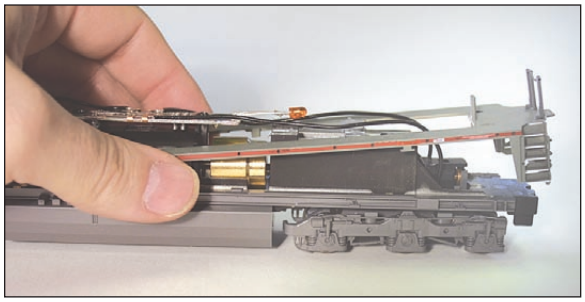

Photo 2

6. Remove the two screws holding the factory installed light and power board (Photo 3). Save the screws.

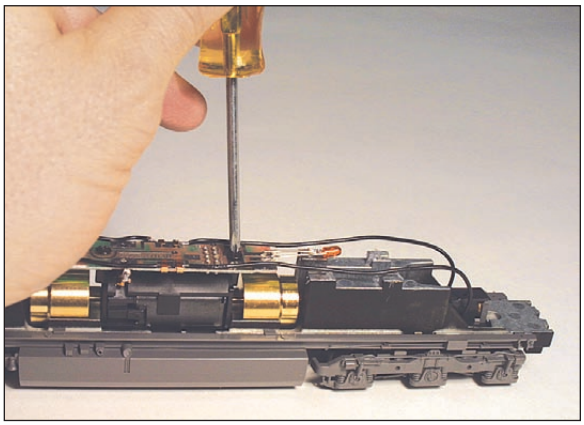

Photo 3

7. Carefully pull upward so that the two copper motor leads disengage from the factory circuit board.

8. Pry the two motor connectors slightly outward so that they are out of your way. Pull the left and right track connections (black wires) from each copper hold-down clip on the sides of the factory board. See Photo 4.

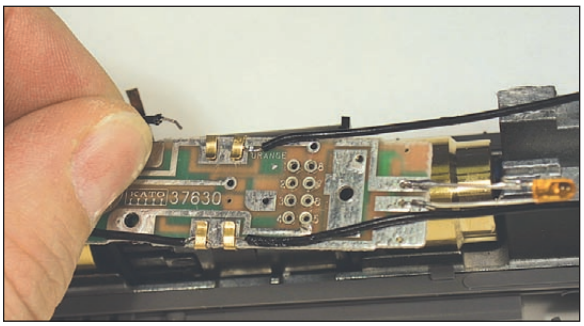

Photo 4

9. Carefully clip each of the LEDs from the factory board as closely as possible to the board. Leave plenty of length on the LED leads. Set these aside for use later on.

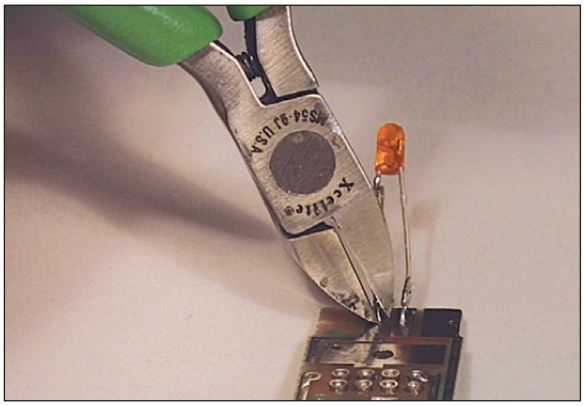

Photo 5

10. Remove the fuel tank by carefully prying the latches located at the front and rear of the tank halves (Photo 6).

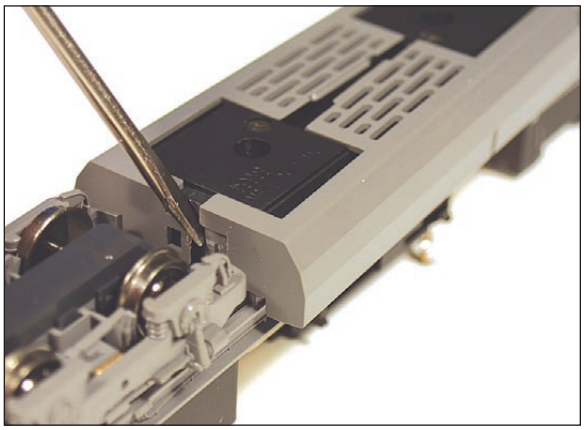

Photo 6

11. Pry the speaker baffle out of its compartment.

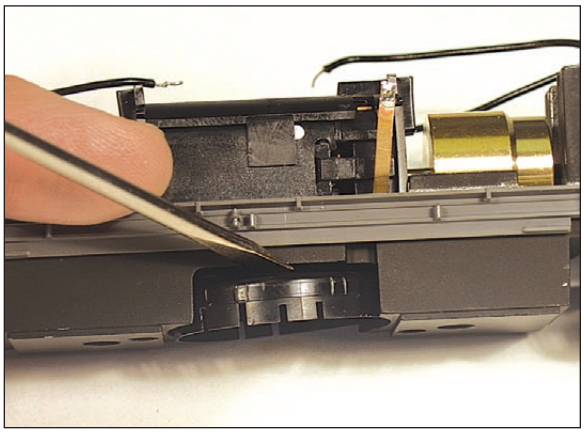

Photo 7

12. Solder the two supplied lengths of violet wire to the speaker terminals.

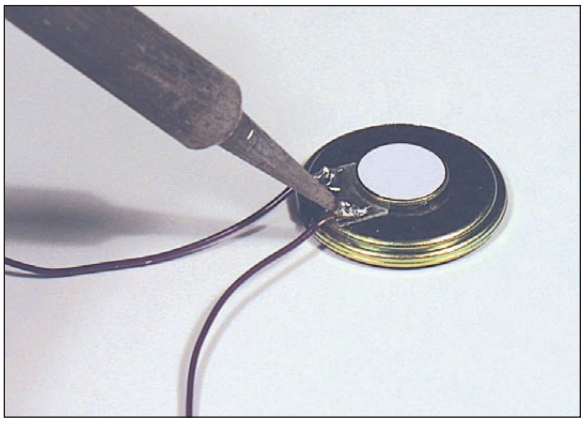

Photo 8

13. Carefully drill a 1/8" hole in the side of the baffle for the speaker leads to pass through. Thread the speaker leads through the hole and press the speaker into the baffle with the diaphragm facing out. Be careful not to press on the speaker cone itself or you may damage it. The

speaker will be facing down toward the rails when the installation is completed.

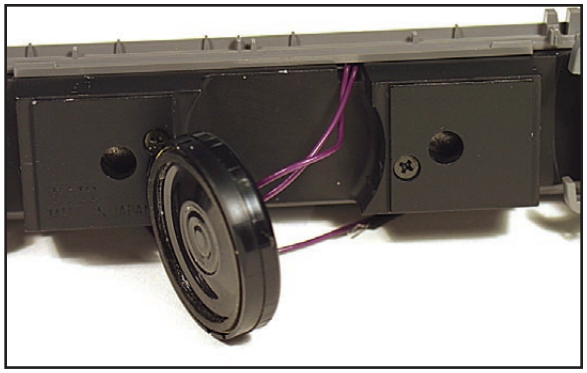

Photo 9

14. One side of the locomotive frame has a hole drilled for the speaker leads. Route the speaker leads through the hole so that they are alongside the motor of the locomotive, but not touching any moving parts or the flywheels.

15. Replace the speaker baffle, speaker, and fuel tank (bell faces forward!) assembly.

16. Using the screws removed from the factory circuit board, attach the AT100LC board securely by orienting it as shown below. Do not overtighten the screws.

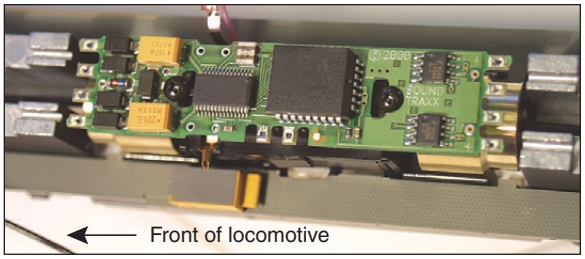

Photo 10

17. Locate the ends of the violet speaker leads. Route the speaker leads between the solder tabs on the rear of the decoder, and use an adhesive or double sided tape to hold wires out of the way of the flywheels and under the side of the decoder board.

18. Trim the leads of the bipolar capacitor provided with your decoder to 1/4" (Photo 11).

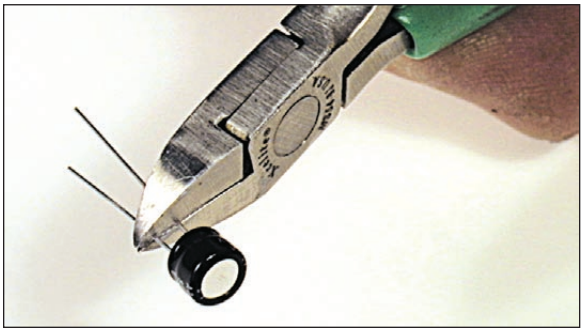

Photo 11

19. Press one of the speaker leads into one of the two speaker sockets at the rear of the decoder marked plus (+) and minus (-). Cut a length of wire measuring 0.50" from the remaining speaker lead. Solder this short piece of wire to one lead of the capacitor that was included with your decoder. Insulate the connection by sliding heat shrink tubing over the end of the wire to cover the connection and capacitor lead. Shrink the tubing with the heat gun. Solder the other end of the capacitor to the remaining speaker lead and insulate.

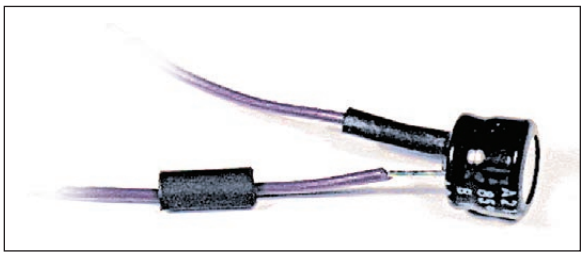

Photo 12

20. Press the free end of the remaining speaker lead into the free speaker socket.

21. Locate the LEDs you cut from the Kato factory board in Step 5. Cut one leg of each LED so that only about ¼" remains. Cut one leg each of two 1000 (1K) ohm resistors so that only about ¼" remains. Solder the short legs of the LED and resistor together so that each resistor is in series with each LED and there is a maximum amount of length left to each side. Save the scrap leads that were cut from the LED and resistor. Your LED assemblies should look like those in Figure 1.

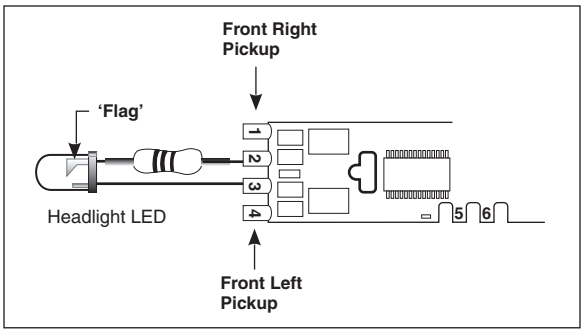

Figure 1

22. Hold each of the LED assemblies up to a light and observe that there is a larger piece of metal (a little 'flag') and a smaller piece that form the two elements. To wire the headlight LED, located the lead with the 'flag' and solder this to terminal 2. Be sure to solder the LEDs as close to their original position relative to the light pipes as they were in the factory installation, otherwise the light transmission to the headlight may be degraded. Solder the other lead of the assembly to terminal 3. To

wire the backup light LED, locate the lead with the 'flag' and solder this to terminal 9. Solder the other lead to terminal 8.

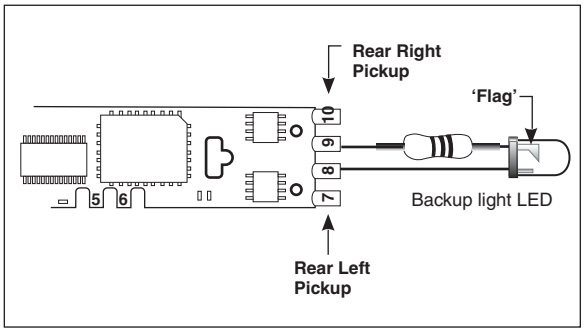

Figure 2

23. Cut approximately one inch from each of the four rail pick-up leads. Solder the left and right rail pickup leads from the locomotive to solder pads 1 and 4 (front) and solder pads 7 and 10 (rear) on the DSD-AT100LC. Secure the rail pickup leads to their molded-in channels on the locomotive weights with adhesive.

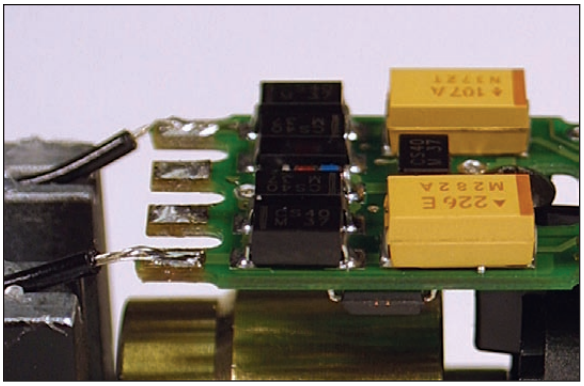

Photo 13

24. Clip the end of the longer copper motor connection so that the large end is no longer attached. Flatten the shorter copper end. Use two short pieces of wire (the scraps from the LEDs and resistors) to connect the motor connections to either of the two very small round connection points (holes) in the circuit board which are immediately above the copper clips on each side of the decoder board. Ensure that these connections do not project any more than necessary beyond the sides of the motor or the decoder board, otherwise they will interfere with the body shell replacement procedure.

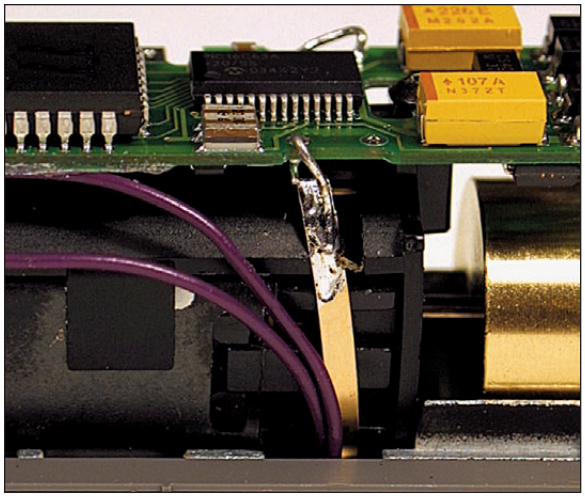

Photo 14

26. Put the locomotive on the main line and set your controller to address 3. Test the headlight and backup light by pressing the headlight function (F0) and making sure the locomotive is travelling in the forward direction. If the headlight does not turn on, you may have the leads reversed. De-solder the LED from terminals 2 and 3 and switch them. Perform the same test with the backup light, making sure the locomotive is travelling in the reverse direction.

25. Reinstall the walkway, then the body shell by carefully pressing it down onto the chassis until the tabs engage. Test the lights once more to make sure the LEDs are properly aligned to the light pipes and adjust if necessary by bending the leads.

This completes the installation of the DSD-AT100LC decoder in the Kato AC4400CW locomotive.

26. **CV Programming**
Most of the sounds from the DSD-AT100LC will not need to be changed. You may wish to change the address of the decoder by changing CV1 (see your command station manual for instructions).

You may also wish to select a different horn or change the ring rate of the bell. **The LC Series Owner's Manual Software Release 2.00** is available for free download at our web site (www.soundtraxx.com/dcc/docs.html).

210 Rock Point Drive • Durango, CO 81301
(970) 259-0690 • Fax: (970) 259-0691 • Email: Sales@soundtraxx.com