

SOUNDTRAXX

Application Note

Walthers/Proto 2000 E7A *Tsunami Digital Sound Decoder Installation Notes*

Overview

This application note describes how to install a TSU-1000 digital sound decoder into a Walthers/Proto 2000 E7A.

Skill Level 2: The entire installation can be completed in one to two hours with no modification required to the model.



Bill of Materials

<u>Stock No.</u>	<u>Description</u>
827118	TSU-1000 for 'Dual' EMD 567 for E-Series
810054	Two 1" Speaker
810110	Two 1" Speaker Baffle kit
810119	1" Speaker Gasket 4-pack
810037	Heat Shrink Tubing 6" 28 gauge Purple Wire Double-Sided Foam Tape

Tools You Will Need

- Soldering Iron
- Rosin Core Solder
- Electronics Flux
- Philips Head Screw Driver
- Heat Gun or Hair Dryer
- Wire Strippers/Cutter
- Liquid Plastic Cement
- Masking Tape
- X-acto Knife



Installation

1. Start by building the two speaker baffles. Take the end plate and the first ring of the kit, snap them together, and apply liquid plastic cement to secure. Repeat this step for the second baffle. Allow time to dry. Save the remaining pieces for future use if desired. (Photo 1)



Photo 1

2. The speakers on this model will be wired in series. Thread one purple speaker wire from the decoder through one of the two holes in the backing of one baffle. Then thread the other purple speaker wire through one hole in the second baffle. (Photo 2)

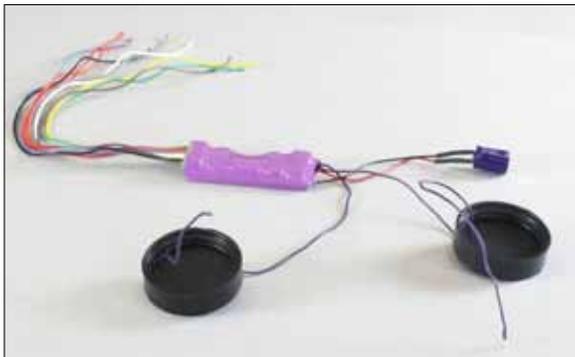


Photo 2

3. Take the 6" piece of purple wire and thread each end through the remaining hole in each baffle. (Photo 3)

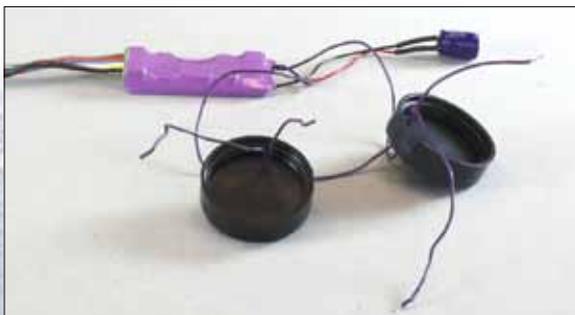


Photo 3

4. Strip 1/8" off each speaker wire and tin the ends using the soldering iron. Then solder the wires to the speakers (The red pad is positive). Be sure to follow the wiring diagram at the end of this document to correctly wire the speakers in series. Wiring the speakers incorrectly can result in poor sound quality. (Photo 5)

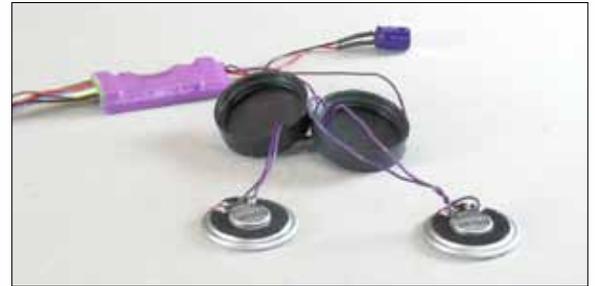


Photo 4

5. To assemble the press fit baffle gently snap in the speakers. Press on the outer metal ring to fit the speaker in place. Be sure not to press on the cone as doing so could damage the speaker.
6. Using the tip of an X-acto knife, peel one side of the protective backing off one gasket and carefully apply to the face of the speaker. Repeat this step for the second speaker. Set the speaker and decoder assembly aside for now. (Photos 5 and 6)



Photo 5

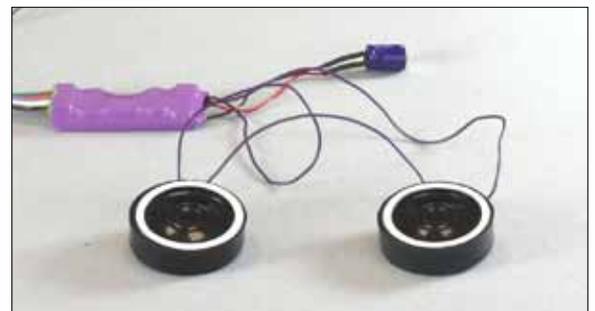


Photo 6

7. On the chassis, remove the two screws that hold the DCC Jumper board in place. Unplug this small board from the 9-wire harness and discard. (Photo 7)

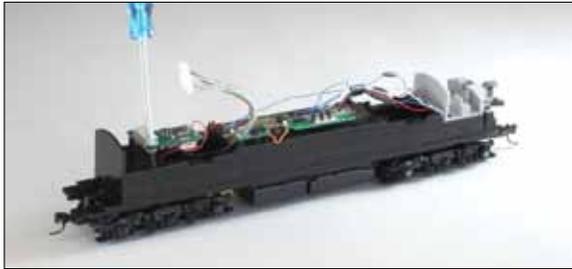


Photo 7

8. Carefully inspect the wiring on the factory-installed circuit board. There is a diagram at the end of this document that identifies the function of each wire. Be sure to note wire colors may not follow DCC common wiring practices, (for example, all the lighting LED negative wires are blue.) Because of this, properly label the wires using masking tape. Designations are also labeled on the bottom of the factory-installed circuit board.
9. Remove the black plastic clips holding the wires in place on the circuit board and gently pull the wires out of their locations. (Photo 8)

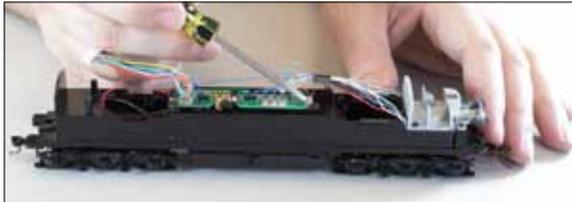


Photo 8

10. Remove the screws holding the factory-installed circuit board in place. Lift the factory board out and set aside for reference. (Photos 9 and 10)

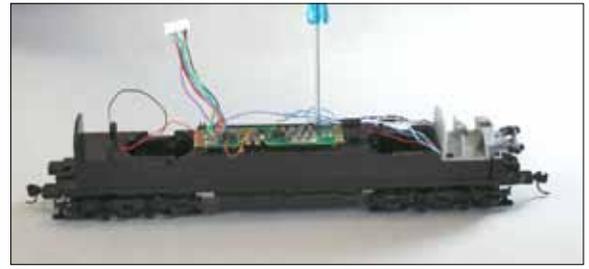


Photo 9

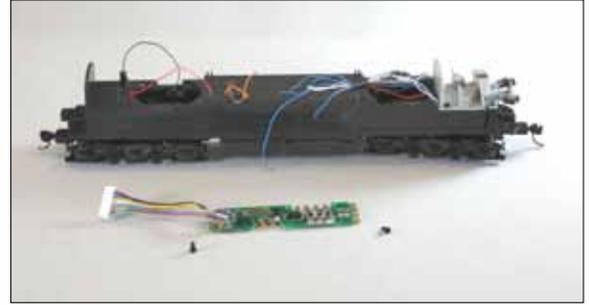


Photo 10

11. Now install the Tsunami and Speaker assembly. Peel the other side of the protective backing off the speaker gaskets on each speaker. Then press them into place in the speaker openings on the chassis. This will not fit perfectly, but the gasket will adhere to the frame and sufficiently secure it in place. (Photo 11)

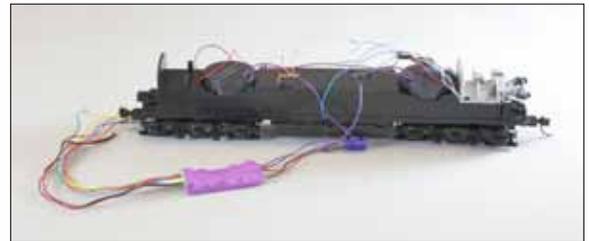


Photo 11

12. Place a 1.5" piece of double-sided foam tape onto the TSU-1000 and position it in the center of the frame with the harness end toward the front, where the factory-installed circuit board previously resided. (Photo 12)

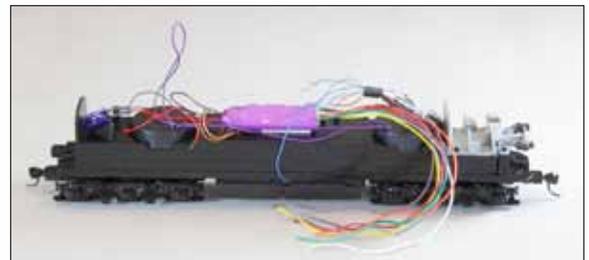


Photo 12

13. Trim 3" off the ends of the wires coming from the motor, then strip and tin the ends of these wires.
14. Slide a 1/4" piece of 1/8" heat-shrink tubing over each motor wire.
15. Shorten the Tsunami's motor wires to 3". Solder the M+ wire to the orange wire from the Tsunami and the M- wire to the grey Tsunami wire.
16. Slip the tubing pieces up over the connections and heat to shrink the tubing and insulate the connection. Take care not to get the heat source too close to the Tsunami. Doing so could potentially damage the purple shrink-wrap around the decoder and void any warranty. (Photo 13)

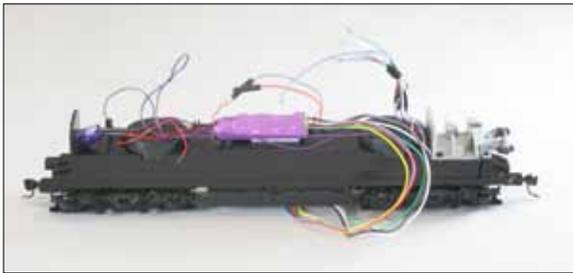


Photo 13

17. Now, attach the track pickup wires. Start by cutting 5" off of the red and black Tsunami wires.
18. Take the red front track pickup wire from the model, the shortened Tsunami red wire, and one end of the 5" red wire, strip 1/8" of insulation off the ends. Twist all three red wires together and solder the joint to form a "Y". Repeat this step with the black wires.

19. Slide a 1/4" piece of 1/8" heat-shrink tubing over the loose end of the red wire "Y" until it covers the 3-wire solder joint. Heat to shrink the tubing and insulate the connection. Repeat this step with the black wire "Y". (Photo 14 and Figure 1)

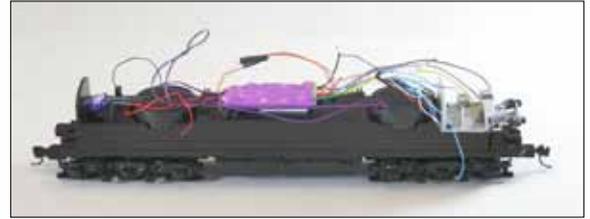


Photo 14

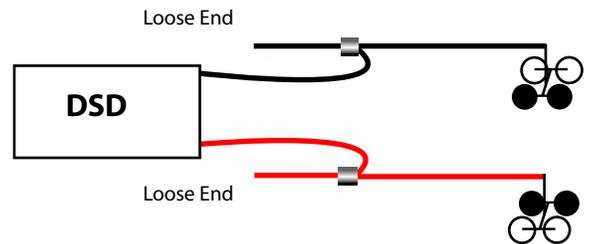


Figure 1

20. Slide a 1/4" piece of 1/8" heat-shrink tubing over the loose end of the red "Y". Strip 1/8" off the insulation from the end of the loose end of the red "Y" and the red rear track pick-up wire. Solder the red wires together, slide the tubing over this connection and heat the tubing to insulate the joint. Repeat this step with the black wires. (Photo 15)

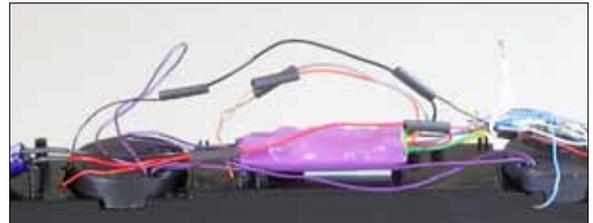


Photo 15

21. Trim 3" from the Tsunami blue wire and slide 1/4" piece of 1/4" heat-shrink tubing over the wire. Solder the function common wires (In the case of our model the white wires) to the Tsunami blue wire. Slide the tubing over the connection and heat to insulate this joint. (Photo 16)

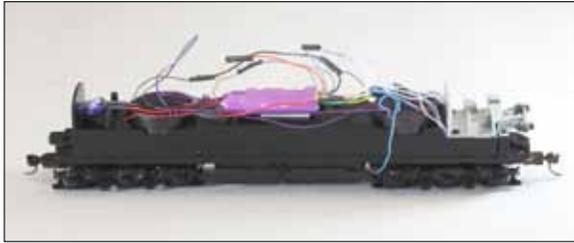


Photo 16

22. This model had the current limiting resistors already wired into the blue lighting wires for the LEDs, so no additional resistors will be necessary. Be sure to check the model for these resistors. If they are not there, use a 1/4 watt 1000-ohm (1K) resistor for each LED.
23. Wire in the lights to the function wires from the Tsunami. Be sure to slide the heat-shrink tubing over each wire before soldering the joints to enable proper insulation after the solder joints are made. The white wire (F0f) goes to the headlamp, the brown wire (FX5) to the mars light, and the green wire (FX6) to the number board lamps. These can be identified by the diagram of the factory-installed circuit board located at the end of this document. If these wires were not properly labeled or identified, removal of the cab casting will allow the wires to be traced to discover their function. (Photo 17)

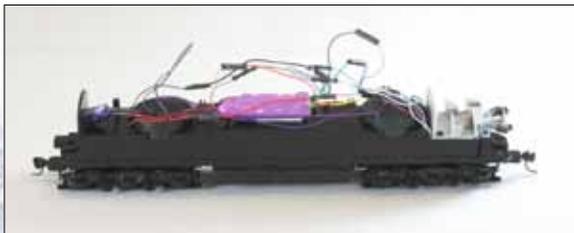


Photo 17

24. Take the model for a test run. Place it on the mainline and run it forward and backwards. The lights and sound should all work properly. At this time, revisit and correct any problems that may occur.
25. The capacitor will easily fit behind the rear speaker. Use tape to hold the wires down and out of the way. Since the yellow wire is not used in this installation, it can be trimmed short if desired, or simply taped down away from any part of the mechanism. (Photo 18)



Photo 18

26. Place the shell over the frame. Follow the instructions provided with the model for proper shell installation. Place the pilot in place and snap into place. (Photo 19)



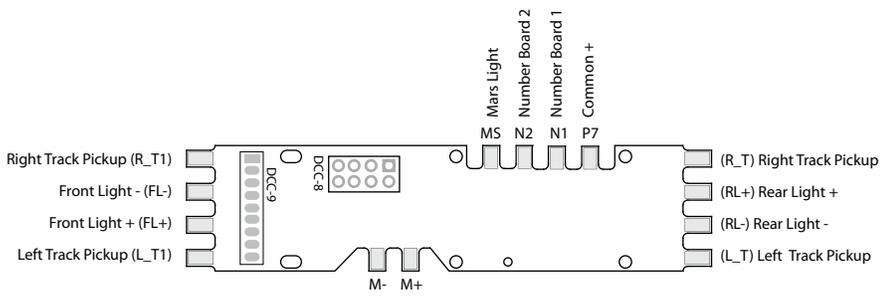
Photo 19

Have fun!

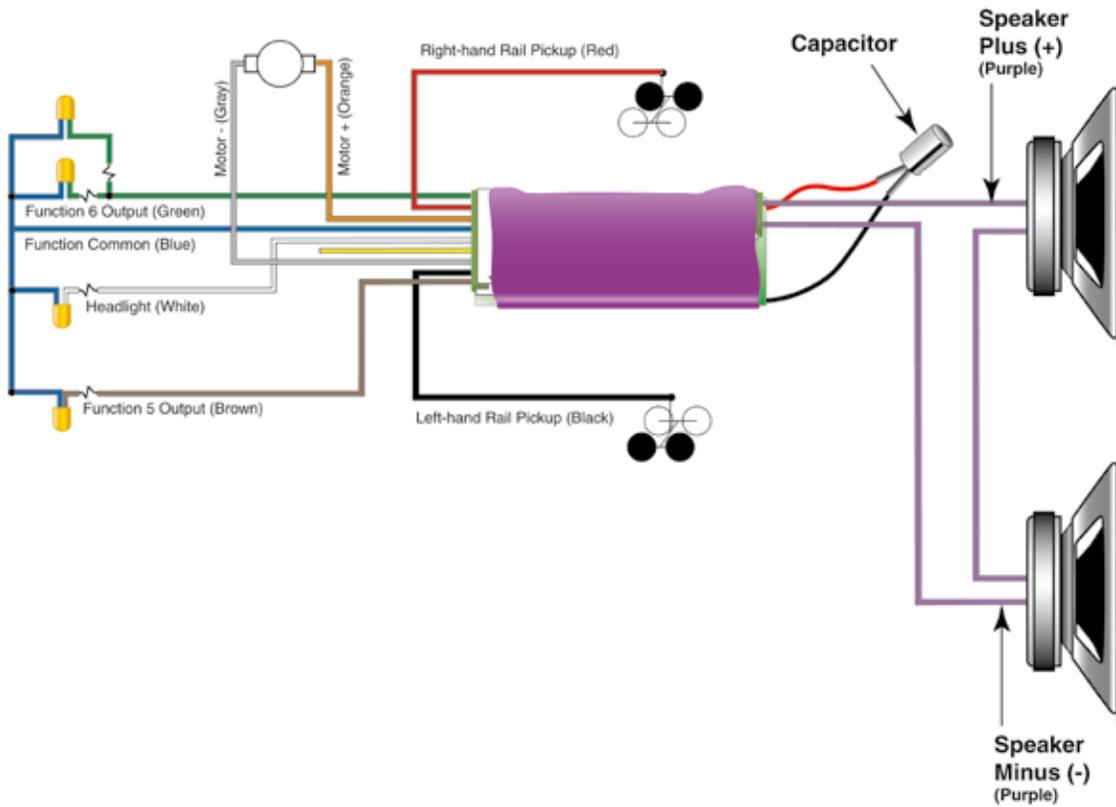
Programming Notes

To program FX 5 for a Mars light, Set CV 51 to 130 for Mars light with LED compensation on.

Factory-installed circuit board drawing



Tsunami wiring diagram



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