

SOUNDTRAXX

Application Note

Kato F3A N-Scale

Tsunami2 TSU-KN1 Digital Sound Decoder Installation Notes

This application note describes how to install a TSU-KN1 decoder into a Kato F3A N-Scale locomotive. These instructions also work for the Kato F7A and F9A. This is also applicable to the Kato F3B, F7B and F9B (except that steps 6 and 7 are skipped since there is no headlight) and to FP7A and FP7B (see additional photo for frame difference in step 15).



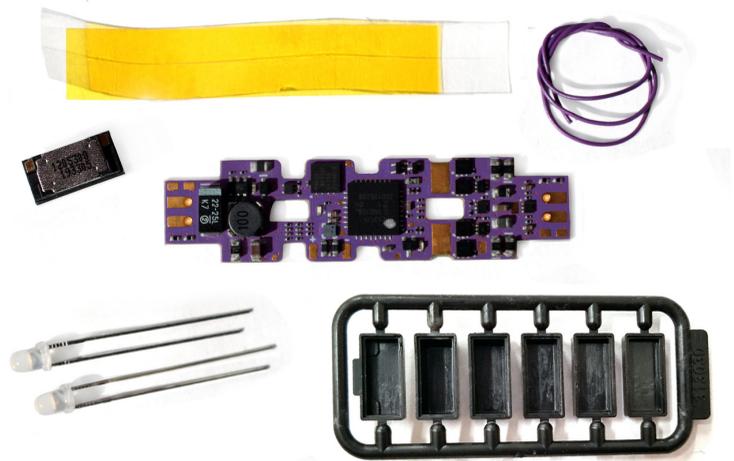
Overview

Skill Level 1: The entire installation can be completed in an hour with no modification required to the model.

Warning: Be very careful when soldering to the TSU-KN1 decoder board. Take special care to not touch the solder iron tip to any of the parts on the PCB or use excess solder, as it might cause a short circuit and damage the product. We recommend Weller WM120 which is low power and has a really fine tip.

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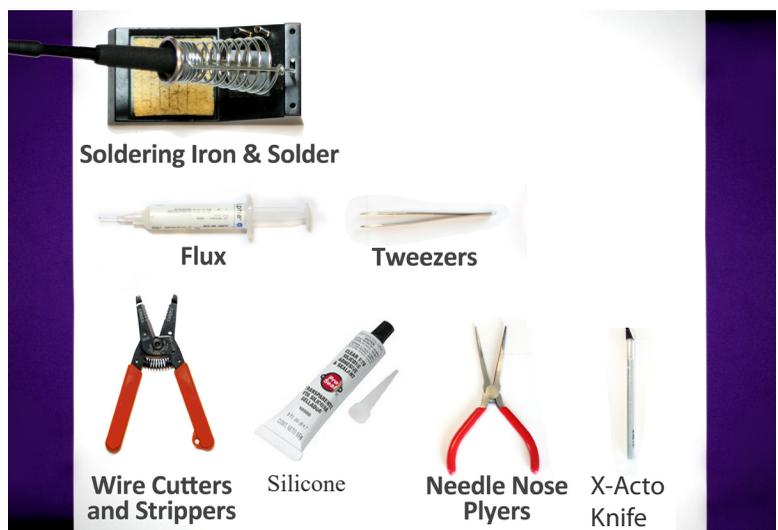
P.N.	Description
885032	TSU-KN1 Decoder & Installation Kit



Tools You Will Need

- 25W Soldering Iron - **with a fine tip!**
- Rosin Core Solder
- **Electronics Grade Flux**
- Wire Strippers
- Wire Cutters
- Needle Nose Pliers
- X-Acto® Knife
- Tweezers
- Toothpick
- Silicone RTV or Gap-Filling ACC

For this installation we also have a list of recommended **CV Adjustments** and a **Wiring Diagram** on the Documentation page of our website under "Application Notes". There is also a complete **Installation Video** on our YouTube Channel.

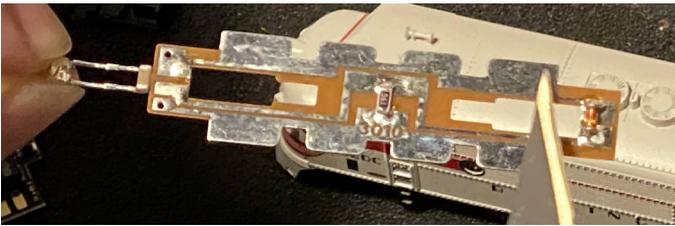


Installation

1. Remove the locomotive body shell. Remove cab interior from frame where applicable.
2. Carefully slide the edge of your X-Acto knife under the grey plastic clip that retains the copper motor leads. Twist the X-Acto knife to pop the clip upward and set aside. DO NOT lose this clip!



3. Slide the circuit board forward and lift to remove from frame. You can see that the strips on the underside of this board is where track power picks up. Set this circuit board aside.



4. Bend motor terminal leads up and away from the dummy circuit board. Using a marker, place a small dot on the right side track pickup strip to mark where it meets with the motor terminal lead.



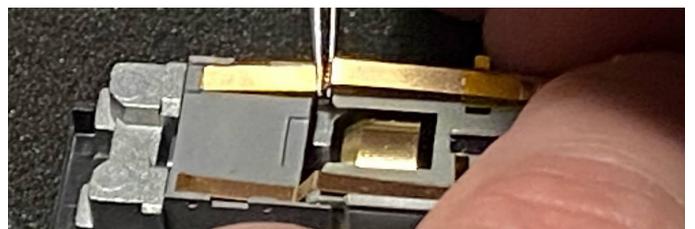
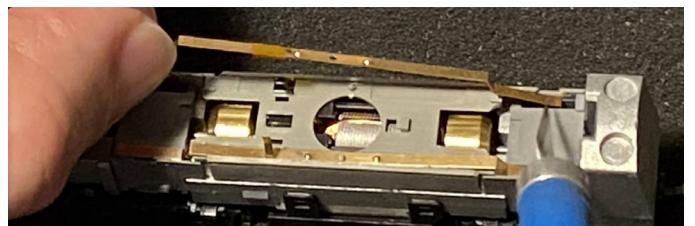
Remove the strip from the locomotive – Do NOT bend! Each of the ends of this strip are under a fixed grey tab. Slide your X-Acto knife under the strip and carefully lift. Pop one end of the strip out from one of the grey tabs to lift the strip away from the frame.

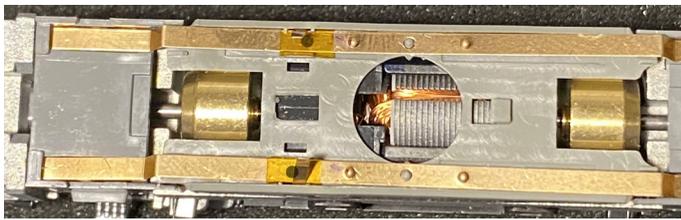


5. Cut a short length of Kapton tape and wrap it once around the track pickup centered over the dot. The tape should fully wrap around the outside edge to ensure the motor lead is isolated from the pickup. DO NOT wrap the Kapton tape around the strip multiple times or it will be too thick to be re-installed properly. Trim unnecessary excess tape short.



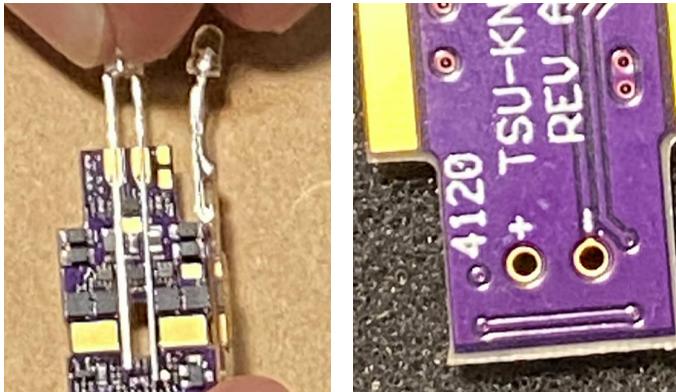
Re-install the pickup strip into the locomotive making sure the ends of the strip fit back under the grey tabs and the contour of the strip matches the locomotive frame.



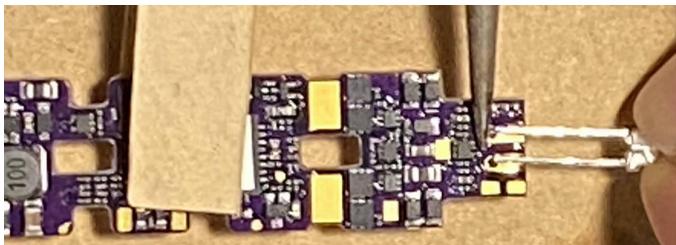


Check that your tape lines up with the motor terminal lead and the strip is fully insulated. Repeat this process for left side.

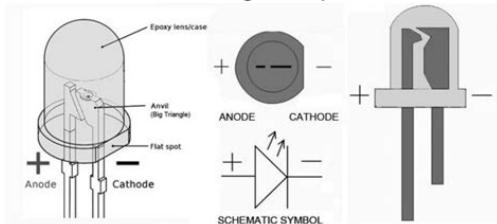
- Cut your new LEDs to match the length on the original circuit board front (and rear if equipped).



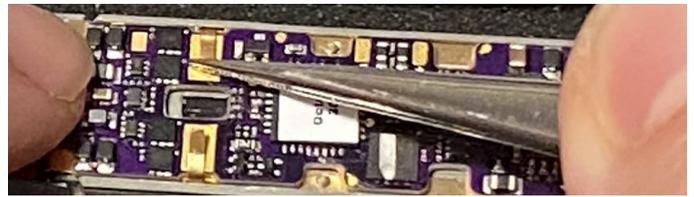
- Solder the trimmed LEDs leads to the TSU-KN1. Make sure to use rosin-core solder and electronics-grade flux when soldering.



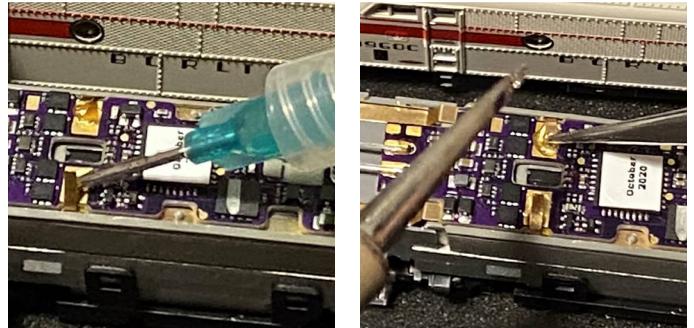
Note: The oval solder pad is the V+ for the Anode side of the LED. Negative and positive markings can also be found on the back side of the TSU-KN1. The LED (-) side is typically the shorter lead, is flat on the LED body or is marked with a triangle shaped anvil as shown below.



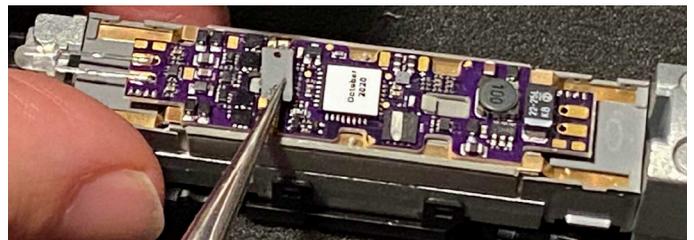
- Install the TSU-KN1 decoder between the motor leads. Press down and slide the board back to lock it under the plastic clip in the frame. Be sure to keep the pickup strips in position.
- Bend the motor leads over the decoder pads making sure the Kapton tape insulates them from the track pickup strips.



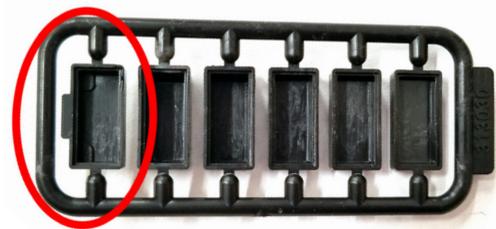
Solder these leads to the motor pads. Make sure to use rosin-core solder, electronics-grade flux, and a fine tipped soldering iron when soldering.



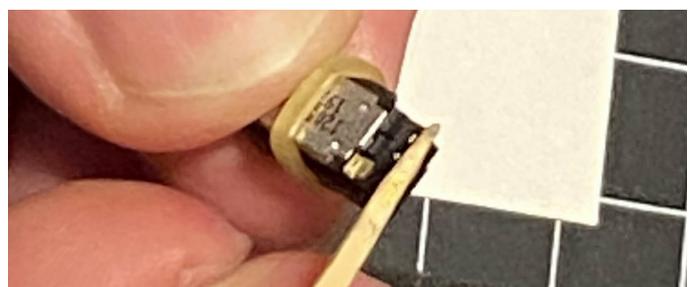
- Re-install the plastic clip to retain the circuit board to the frame.



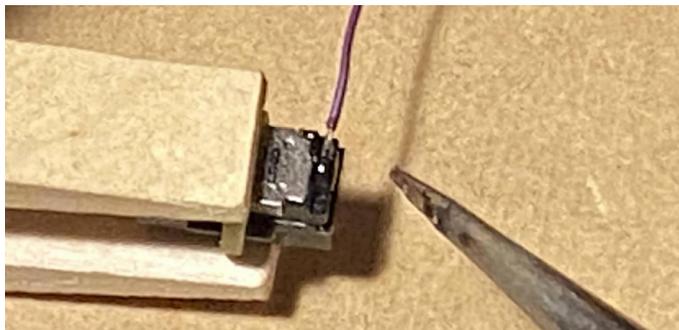
- Choose the speaker baffle that fits best in your model. For the F3A use the baffle with the small tab on one side. Carefully cut the baffle from the sprue with an X-Acto knife and trim any excess molding flash.



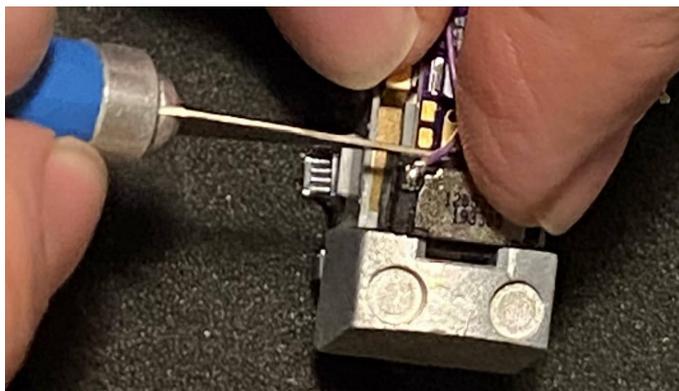
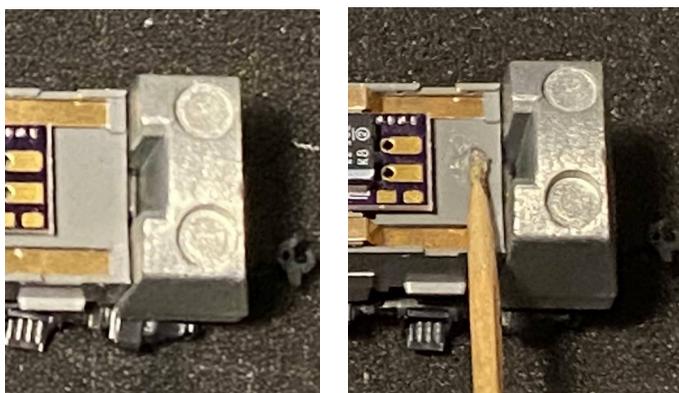
- Apply a small bead of glue around the top edge of the baffle using a toothpick. Set the speaker into the baffle with the solder terminals facing up and on the opposite edge of the small tab as shown below. Allow glue to dry.



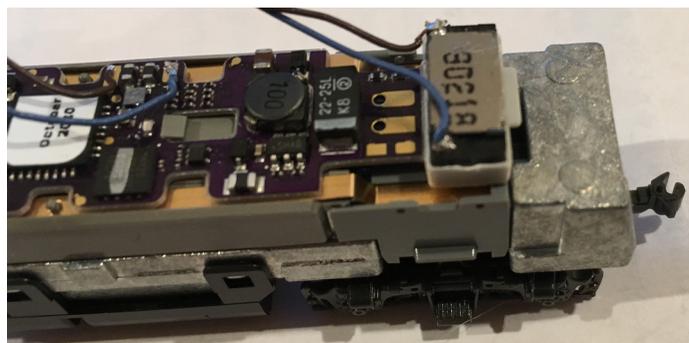
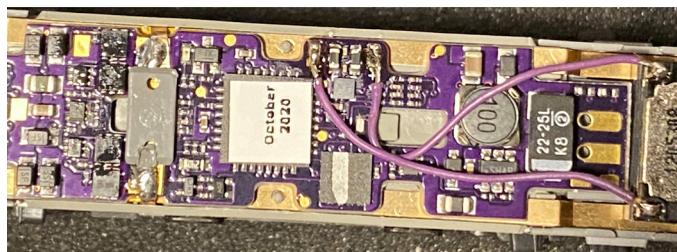
13. Trim the purple wire to fit from the speaker terminals to the Mini Cube 3 speaker placement. Trim the insulation and tin all of the ends of the purple wire. Once the glue between the speaker and baffle has set, solder the wire to the speaker terminals using rosin-core solder and electronics-grade flux. We recommend soldering to the speaker before installing the speaker in the model. We used a small homemade clamp made from a clothes pin to hold the speaker while soldering.



14. Mount the speaker in the model. The small tab on the speaker baffle will fit snugly into the locomotive frame. Use a small amount of RTV, double sided foam tape, or Kapton tape to secure the speaker in place.



15. Solder the wire to the S+ and S- terminals on the decoder using rosin-core solder and electronics grade flux.



Note that the Kato FP7A and FP7B locomotive frame is slightly different than the F3A. See photo above.

16. Replace the cab interior. It simply pops back in place.



17. Replace the locomotive body shell and enjoy!

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