

Scrolling Text Message Car

by Del Tapparo

I recently discovered a neat project of fellow large scale trains electronics tinkerer, Dave Bodnar. Dave has incorporated some large LED matrix displays into train cars which display a moving message across the sides of the cars as they travel around the layout. They can be used to attract attention of visitors at train shows, and also provide club contact information or whatever you want. The message can be changed at any time via a simple smart phone app.

Hardware

MAX7219 LED Matrix modules are combined to make up the display. Two modules of four each 1.25" X 1.25" (8 X 8 LEDs) blocks are connected together on each side of the car.

An Arduino Pro Mini microcontroller drives the LED displays directly via 5 control lines. An HC-06 Serial Bluetooth board provides communication to a cell phone via Bluetooth. An app called "Serial Bluetooth" is used to send messages to the display. The app has provisions for storing pre-determined messages, or you can type them in directly. Power for the project can be provided via on board 5V USB power banks or a 7.4V Li-Ion battery pack.

Software

The core of the program is from the Scrolling Text example in the Arduino MAX7219 library. Modifications for Bluetooth communications were easily added.

Train Car

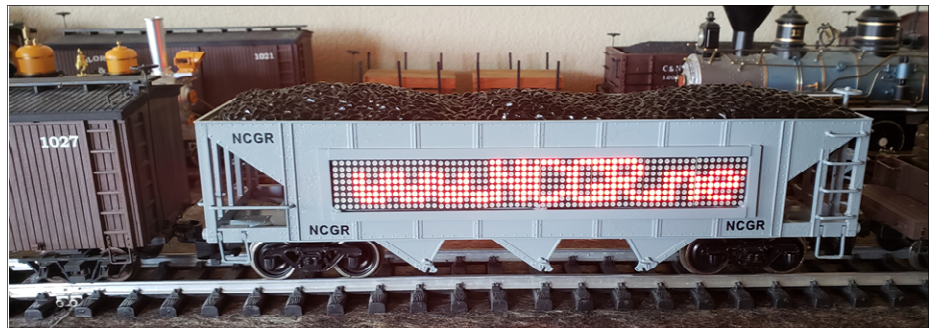
I wanted a car with flat sides and no interruptions in the message like box car doors. An old hopper with a dummy coal load to hide the electronics filled the bill. However, a slightly longer car, maybe a gondola, would allow for 3 of the 5" long LED matrix



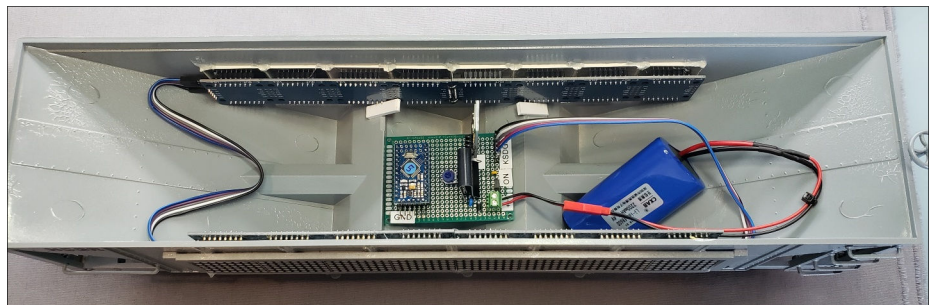
Dave's implementation used two box cars with displays on both sides.



For my project, I choose to use a single hopper, with displays on both sides.



Hard to tell in these photos, but the LEDs are red and easily read from a distance.



Control board and battery.

modules to be used. And the vertical ends of the gondola would minimize the space between cars if you wanted to add a second car.

Reference

Dave Bodnar's website http://www.trainelectronics.com/Arduino/LED_Matrix/8x32Module/index.htm and his YouTube channel at <https://www.youtube.com/watch?v=ZSG-jjwyi7w&t=9s> (or search YouTube for "Dave Bodnar LED Matrix").

