

DCC Sounds for the Bowser PCC Streetcar Model

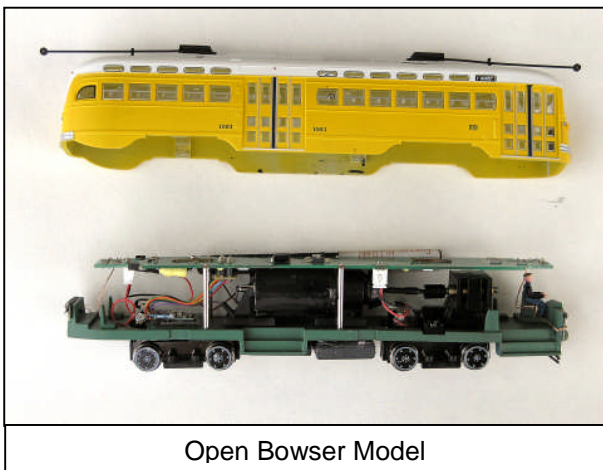
By Fred Miller

The PCC Streetcar model released by Bowser® is a nicely designed replica of a post-war All-Electric PCC car. This model of the Presidents Council (PCC) design is preserved in a number of Trolley Museums as well as restored/upgraded versions on the F-Line of the San Francisco Municipal Railway. Bowser® has released the model in a number of different authentic city paint schemes.



Sound Equipped Bowser All-Electric PCC Car on Author's Layout

Based on earlier experience implementing DCC sounds in some of my other traction equipment, I decided to do a custom sound installation for this car. My earlier "generic" trolley sounds and the Peter Witt Streetcar sounds were not appropriate for the PCC streetcar. This article describes my sound installation in a car provided by CustomTraxx® which was equipped with a Train Control Systems® (TCS) M4T™ motor decoder. This decoder was developed by TCS in conjunction with CustomTraxx® specifically for the PCC car. Other motor decoders can be used with the PCC, including the Digitrax SDN144™ combination motor and sound decoder.



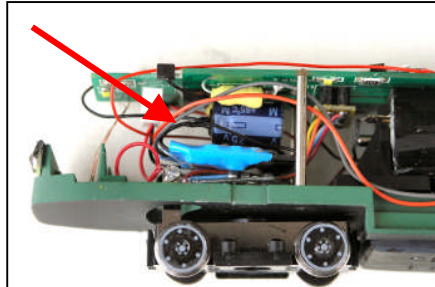
Open Bowser Model

After selecting the model, the next step was to acquire the appropriate sounds. Since I did not have the opportunity to record the sounds from an All-Electric PCC, I put out a quest in various Internet discussion groups for help. A number of people responded and I took advantage of the generous offers to use sounds recorded by George Huckaby of CustomTraxx® and Dennis Cramer of the Pennsylvania Trolley Museum®. George had recordings of various cars on the San Francisco F-Line and Dennis captured sounds from restored Car No.2711 at the museum. ^{See Footnote 1} These original sounds needed substantial clipping and editing to

make them useful for my Sound Project. This was accomplished using WavePad™ Audio Editing software. The actual program code to run in the Digitrax® SFX sound decoders was developed using the author's SPJHelper. ^{See Footnote 2}

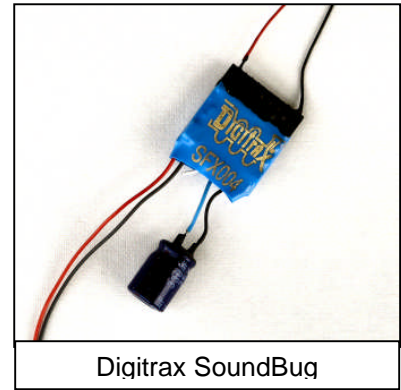
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After the software was developed and the sounds were edited, the software project was ready to download into a Digitrax® SFX sound decoder using the Digitrax SoundLoader software . I decided to use the inexpensive Digitrax® Soundbug™ (SFX004), which fits very nicely into the model right on top of the TCS M4T™ motor decoder mounted in the rear of the car.

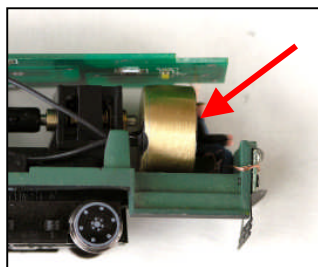


SoundBug over Motor Decoder

The Digitrax® Soundbug™ can be purchased from various retailers for less than \$45. Clipping off the extended pins on the 8-pin plug, normally used to attach the Soundbug™ to a 165 series Digitrax® motor decoder, made the profile better to fit in the car. Power leads can be soldered to the two large hole pads. I did shorten the leads to the capacitor and insulated all exposed areas with Liquid Tape™ and stuck it right on top of the SoundBug.

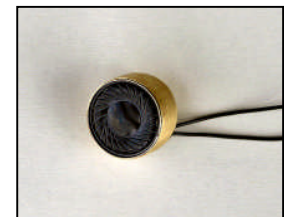


The Bowser® PCC model does not provide a speaker enclosure in the frame as do some of the other car manufacturers, so I had to develop my own. I found that a 0.62" (16 mm) 8 Ohm, 0.1-Watt speaker available from a number of DCC retailers for less than \$10 would fit just behind the motorman in the front of the car. Although plastic enclosures are also available for these speakers I built my own out of 21/32" brass tubing 8 mm long and a soldered brass backing sheet. The 0.62" speaker fits nicely into the tubing. Further trimming of car interior castings might make it possible



Installed Speaker

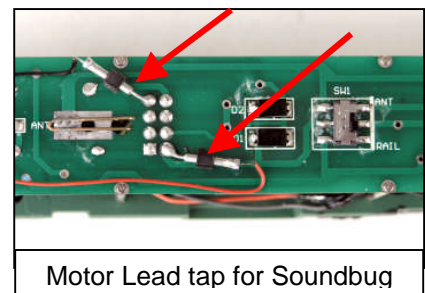
to fit a larger speaker but to my ears, the improvement in sound wasn't worth the extra surgery. Most of the sounds I have implemented are at the higher frequencies so the small speakers do just fine. Two holes were drilled at the back of the enclosure and subsequently sealed. The speaker with enclosure was ACC'd into the front of the car.



Brass Enclosure



I have also found that reading/writing CVs and loading sound files to a sound decoder is much improved if the motor decoder can be disconnected. The photo shows my plug and socket addition to the top circuit board to isolate the sound decoder when desired. The "plugs" are simply tapped off the back soldering spots for the provided DCC plug.

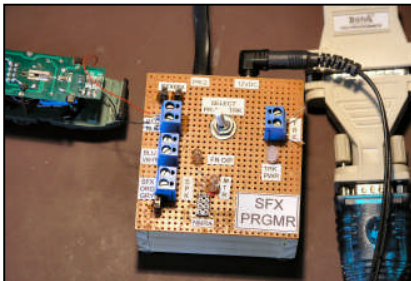


The Sound Project I developed for the PCC car includes a variety of sounds from the prototype cars and my own sound collection. Throttle Function keys operate sounds for gongs, doors, and crossing horns. Motor/track sounds are matched to the throttle settings. (Unfortunately the track sounds are not varied when the MT4 special start/stop function key is used. This is because those speed settings are internal to the MT4™ decoder and are not represented as DCC throttle speed commands.) Two different gongs are provided (F-Line and PTM Museum cars) and two strikes are automatically played with Function Key F2. The All-Electric PCC car did not have an air pump compressor, however the sounds of a Motor Generator

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are included in the sound set and run continually with special start and stop sounds when the DCC address is selected/unselected. Farebox coin clinks and voice announcements are randomly issued at door open/close cycles using Function Key F4 when the car is at rest. The same Function Key will issue track squeals when the car is in motion. Standard horn crossing signals (2 long, one short, one long) are played using Function Key F5 for off-street private right of way travel. All sounds can be muted with Throttle Function Key F7 and volumes for each individual sound can be adjusted by changing decoder CVs. Function Keys F0, F1, F3 and F6 are reserved for the TCS M4T™ functions.

Addendum-Installing Digitrax® Sound Projects



Author's rig for Programming

Digitrax® format Sound Project files include software to command the SFX sound decoder, sound clips in standard Microsoft® WAVE file format, and other control information. The Sound Project file is loaded into the decoder using Digitrax® SoundLoader™ software and a PR-2 or PR-3 hardware interface between the decoder and the PC. The All-Electric PCC Streetcar Sound Project (file name PCC-II.spj) is loaded into a Digitrax® SFX sound decoder. The file is available from my web site (www.fnbcreations.net/tractionfan).

For those individuals not wanting to invest in the PR-2™ or PR-3™ interface I offer to load, without charge, my All-Electric PCC Sound project onto a provided SFX sound decoder. Contact me at tractionfan@aol.com for further information.

DCC Throttle Function Key Definitions	
F0	Headlight (used by M4T Motor Decoder)
F1	Inside Lights (used by M4T Motor Decoder)
F2	Two Trolley Gongs
F3	Activate F6 Auto Stop/Start (M4T)
F4	Open Door (F4-ON), Close Door (F4-OFF) or Track Squeals if car is in motion
F5	Crossing Horn Sequence
F6	Auto Stop/Start (M4T)
F7	Mute all sounds when ON

SFX Decoder defined CV's	
CV58	Master Volume
CV60	Sound Scheme (MUST BE 0)
CV132	Controller Notch Rate
CV135	Volume when Muted
CV140	Motor Generator Volume (1=turnoff sound)
CV141	Door Sounds Volume (1=turnoff sound)
CV142	Gong Volume (1=turnoff sound)
CV143	Squeal Volume (1=turnoff sound)
CV144	Voice Volume (1=turnoff sound)
CV145	Track Sounds Volume (1=turnoff sound)
CV146	Horn Volume (1=turnoff sound)
CV147	Gong Selection (1=FLine, other = PTM)

References and Resources		
Item	Manufacturer	Source
HO All-Electric PCC car	Bowser® (www.bowser-trains.com)	Bowser-Trains®, CustomTraxx® (http://home.earthlink.net/~traxx/link.htm) and others
0.62" round 8 ohm speaker, e.g., TDS 0.63 Dia Speaker	Tonys Dream Speaker, (tds063), and others	Tony's Train Exchange® - (www.tonystrains.com , American Hobby Distributors, UlrichModels® (www.ulrichmodels.biz) and others
SFX004 Soundbug™ decoder	Digitrax, Inc.®, www.digitrax.com	Tony's Train Exchange® - www.tonystrains.com , and others
PR2 or PR3 Interface with SoundLoader® software		Tony's Train Exchange® - www.tonystrains.com , and others

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References and Resources		
Item	Manufacturer	Source
TCS M4T custom motor decoder	Train Control Systems [®] (TCS), www.tcsdcc.com	TCS, CustomTraxx [®] and others
All-Electric PCC Sound Project, File: "PCC-II.spj" containing sounds and software	Developed by the author	Digitrax website SoundDepot (http://digitrax.com/sounddepot.php), or authors web site (see below)
Authors Web Site	www.fnbcreations.net/projects.htm	
Authors email address	tractionfan@aol.com	
CustomTraxx	http://home.earthlink.net/~traxx/link.htm	
Yahoo DigitraxSound group	http://groups.yahoo.com/group/digitraxsound	
Philadelphia Trolley Museum	http://www.pa-trolley.org/	

Footnote 1 The ownership of the original sounds provided by CustomTraxx[®] and the Philadelphia Trolley Museum[®] is retained by those organizations. Copying or reproduction of those original sounds is prohibited without written permission of the owners.

Footnote 2 SPJHelper[®] is a software tool to enable construction of SFX Sound Project software. It operates in two different modes: one for developing simple sound projects using graphical drag and drop and pull-down menu selections; and another mode for aiding experienced programmers for easy access to the necessary tools. SPJHelper[®] is available without charge from the Author's web page (www.fnbcreations.net/projects.htm)