Using a Power Cab and Auto Switch for a Program Track

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These comments are primarily for use with a combination of the NCE Power Cab and Auto Switch.

When the Auto Switch is not receiving power from the Power Cab or is in PROGRAM mode, the relay connects the input (DCC) terminals to the program (PRGM) terminals. This is the normally closed state of the relay. The main (MAIN) terminals are disconnected.

“This is done so when you enter programming track mode, the relay is turned off and hence is not energized drawing high current. The goal is to minimize the Auto Switch’s current consumption and its influence on the success of reading a decoder’s Acknowledge current pulses.” (from Mark Gurries)

When first started, the Power Cab is in RUN mode and the output is full power. The Auto Switch will sense this and fire the relay to connect to DCC terminals to the MAIN terminals. Without an Auto Switch, the track would see the full power.

With the Auto Switch included, the PRGM terminals would be dead in this situation to protect the decoder. As stated above, the Auto Switch relay NC contacts connect the DCC (in) to the PRGM terminals. It takes a few seconds for the Auto Switch to sense the Power Cab output state (full power) and switch the relay so, do NOT put a locomotive on the programming track until after the Power Cab is powered up or it will see full power during this initial boot time.

The Power Cab switches to reduced power when you go into ‘Use Program Track’ on the throttle and switches back to full power when you exit this mode. Otherwise, it is in full power mode.

When the Auto Switch senses the programming mode, the relay will switch and feed the PRGM track terminals. Otherwise, the program track is dead and the output goes to Main.

If you are using JMRI Decoder Pro, the Power Cab switches to reduced power when you ask Decoder Pro to Read/Write one or more CVs and switches back to full power when that request is done (or fails).

The Auto Switch relay will switch to and feed the program track during this time also so the program track is dead except during a command. This is fine for protecting the decoder but does not allow you to operate the locomotive.

Using the siding for programming with the 4PDT switch and isolated section allows you to test the decoder and do initial programing in the reduced "safe" programming mode and then change to POM to run the loco without affecting the rest of the layout. When all is happy, you can throw the switch and drive the loco with the prime layout control.

I have drawn several variations for connecting the Auto Switch that are shown on the ‘Electrical’ page.

**\*\* Best of Both Worlds** (Dave in Australia)

*“(Please don't read this section unless you fully follow and understand the details above.*)

You can add a DPDT between the Auto Switch (connected to switch between its MAIN  and PROG outputs) and feed its common to the 4PDT. This allows you to have:

1) A MAIN/PROG switch (the 4PDT) that isolates the spur from the layout and changes it to a Program Track.

2) A SAFE/TEST switch  (the DPDT) that allows you to do your initial checking on an always-low power Program Track (SAFE) and then switch to full power (TEST) to allow you to use the Power Cab for test running and POM.”

Making this DPDT switch one with a center off position will allow the program track to be electrically dead to place or remove locomotives to/from the track.