Using the Digitrax® PR1 to
Program TCS or other Decoders.

I encountered 2 problems and have detailed my solution to the problems below. **If you have programmed ANY decoder on your computer, you do not have the first problem and can skip to the second page.**

The first problem is getting a **good communications port (com port).** If you do not have a red slash across the com port logo, you have a com port **but not necessarily a good com port.** The instructions furnshed with the PR-1 talk about a **DB 9 to DB 25 port not working well.** The diagram (lower right) may help explain what the problem looks like. It became obvious **I needed a serial port card with a RS 232 port.** The card I purchased had a parallel port and a DB 9 serial port on the card plus a **10 pin plug (9 pins won't do!) to a DB 25** (RS 232) serial port included.
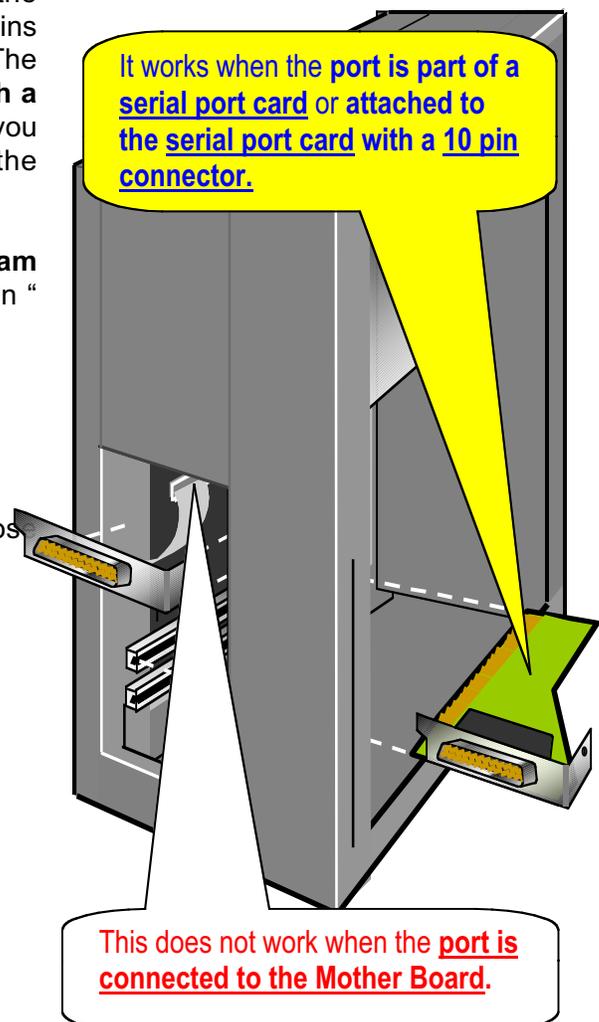
The instructions with the card did not explain the installation of the 10 pin plug. The board is marked for pins 1 & 2 and 9 & 10 but the plug was not marked at all. The key is that the 10 wire band to the plug had **one wire with a red tracer.** This is number 1 so connect it that way. If you solved the problem, you will be able to complete the following setup step.

It works when the **port is part of a serial port card** or **attached to the serial port card** with a **10 pin connector.**

After you install the drivers, start the PR1 program and click on the Blue and White PR1 box. Now click on " Serial Interface ".
Step 1. Find the PR1 Com Port.
Step 2. Set the Baud Rate.
Step 3. Check all 3 boxes
Step 4. Click on " O.K. ".

The next piece of information will be helpful to thos who are not Windows literate. **If you need to disable the FIFO option,** follow these steps:
Step 1. Open " My Computer ".
Step 2. Open " Control Panel ".
Step 3. Open " System ".
Step 4. Click on " Device Manager ".
Step 5. Click the + sign by " Ports (COM & LPT) ".
Step 6. Open the Serial Port connected to the PR1.
Step 7. Click on " Port Settings ".
Step 8. Click on the " Advanced " button.
Step 9. Unckeck the box starting " Use FIFO Buffers "
Step 10. Click on " O.K.".
Step 11. Set the " Bits per Second " (baud rate).
Step 12. Click on " O.K.".
Step 13. Click on " O.K.".
Step 14. Close " Control Panel.".
Step 15. Close " My Computer.".

This does not work when the **port is connected to the Mother Board.**

"Tower Type" PC Shown With Cover Removed

The second problem I found is that the PR1 is designed to read Digitrax decoders which "read" at a higher voltage than TCS, Soundtraxx and others. Although this problem exists, all are within NMRA specifications. A quarter of a volt makes the difference between working and not. When reading a decoder, look for one of the following:

1. **You get all 255s except for the address.** This indicates that the supply voltage is too high.
2. **You get all 0s or it won't run at all.** This is an indication that the supply voltage is to low.
3. **You get random numbers.** This is an indication that the supply voltage is a little low or you don't have enough resistance across the motor leads.

The closer you are, the fewer random numbers. If the program is running, you will note the engine puffing and or *** in the box it is searching. The program reads very reliably by using new batteries and reducing the voltage to 15 volts with linear potentiometers and a voltmeter. I believe this works better because the new batteries recover faster. If you watch the voltmeter while the program is running, you will see it jumping all over the place. I added an on / off switch, so I don't have to disconnect the batteries, (2) nine volt battery terminals and (2) leads with alligator clips. If you want to program the decoder on a harness separate from the engine, add (3) 100 ohm 1 watt resistors and a decoder wiring harness.

Even though it is possible to add a fixed amount of resistance to the circuit when you are using a power source that doesn't erode, by using potentiometers it is easy to make fine adjustments to program any brand of decoder.

The wiring diagram at the right shows how I made the program more reliable. Be careful not to reverse the polarity on the red and black leads from the PR1. This plan will let you program by either putting a decoder in the harness or attaching the alligator clips to a section of track or the engine wheels.

After I found how well it worked, I bought a 2"x4"x6' plastic Project Box to mount the components and keep the desktop tidy. Since I use harness type decoders, I mounted a decoder harness to the cover by cutting all but the power and motor leads flush from the harness. I then drilled four small holes in the cover, fished the wires through the holes and glued the harness to the cover. The (3) 100 ohm resisters are wired in series between the gray and orange motor leads.

One last hint. If I remove the decoder to run it, when I reinstall the decoder, the program may not run. If I run the Digitrax program and then go back to the CV program (or vise versa), it resets and works fine. Only twice have I had to close the program and restart it. Good Luck!

James R. Loudon

PR 1 Wiring Setup