

Scale Rails DCC Hardware – 12/25/2020

Scale Rails has used Digitrax DCC since 2004 at the club. In the Projects binder you will find a Topology map of the HO layout. The DCS100 is the Command Station and is set for 120 slots and enables auto-purge of slots when not in use for a long period. Address 0 or DC operation is not allowed. The CR2032 battery needs to be replaced about once a year to maintain the switch (configuration) settings. Seven additional DB150s are used to develop the DCC power for the layout. Today we have 40 Amps of DCC. A DT402D throttle is used to turn track power on and off [Power Key + or -].

Startup:

First turn on the wall power switch for the computer system in the Dispatcher room. This turns on the Raspberry Pi Wi-Fi throttle controller for the Smartphones. Next turn on the four wall type switches in the small chassis in the center of the main layout in the following order. [3-Upper lights, 4-Lower lights, 2-Layout power, then wait 20 seconds, 1- DCC power]. Next use the DT402D throttle to cycle DCC power off the on. All should be good.

DCC Control:

The command station receives the throttle commands and sends power and control information to the track. Each Cab or Loco can have a different DCC mobile decoder address [4-9999]. Often our multi-loco consists have the same address to make control easier. Throttles are used two ways: the UT4D or DT402D Digitrax Duplex wireless throttle system connecting via the Loconet to the command station or by the Raspberry Pi Wi-Fi throttle system for Smartphones connecting via a LocoBuffer-USB to the command station. Engine Driver is the Android app for the Smartphones. Apple has a different one. More members are using the Smartphone over time. The club as 24 UT4D's and 4 DT402D throttles. We use the Powerex NiMH 9.6 VDC batteries for the throttles with 2 ten station chargers.

We use 3 UR92 Duplex receivers for the Digitrax Duplex throttles. We no longer run the Simplex UR91 receivers. The receivers are spread around the layout to avoid dropouts. All three connect to a Star Loconet Block in the tunnel behind the command station. This connects to another Star Loconet Block and then to the LNRP's. The command stations, booters and receivers are on a protected Loconet. This is accomplished by using 2 LNRP's [Loconet Repeater]. The secondary Loconet supports the plug-in jacks around the layout. Over time the cables can fail causing a Loconet storm. The LNRP will shut this down and protect the Primary command Loconet.

Loconet:

Loconet is based on a RJ16 6 wire flat silver satin cable. Both serial and star configurations are allowed. 180' of cable is allowed per driven path. By using the LNRP our longest path is about 100'. The biggest Loconet cable problem is not using the razor knife blade to cut the cable when putting on new RJ16 connectors. Frayed wires can touch over time. The RJ16 crimp tool has this razor blade.

Digitrax Duplex vs Wi-Fi Smartphone throttles:

Today we see higher reliability with the Wi-Fi Smartphones than Digitrax Duplex.

Spare Parts:

We have several DCS100's, DB150's and UR92's as spares. Donations over time.

Command Station Switch Settings:

These are checked or changed using DecoderPro on the computer. It must be set to LocoBuffer-USB mode. This connection is shared by the Raspberry Pi Wi-Fi throttle controller. Once DecoderPro is connecting via the LocoBuffer-USB then select Command Station under Tools. This will show the Switch settings. Make changes as needed.

DCC Power System:

