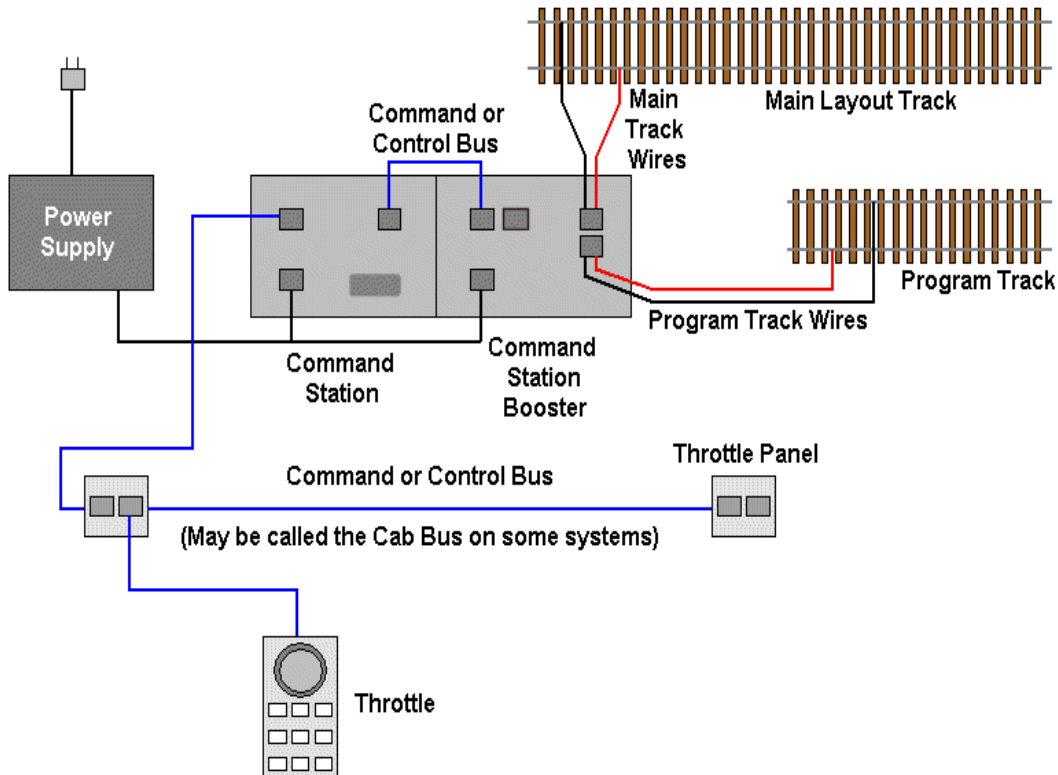


DCC Basics for MRR layouts

By
Elmer McKay

Part 2

I. Basic DCC System Parts



A. Command Station

The Command Station is the heart of the DCC system. It takes the input signals from the Command bus, that the hand-held controllers connect to, and changes them into the digital signals that the Decoders in the Locomotives receive from the rails.

The Command Station, together with the Command Station Booster, also known as just the "Booster", provides the Digital Control Signals and Power to the rails of a Model Railroad Layout.

There are a few other connections from the unit besides the one to the rails. One is to the Command bus, as well as an input from an external power supply that provides the main electrical power for the locomotives. It also has a low power output that connects to a separate section of track that is used for programming locomotives equipped with DCC decoders (also known as a Programming Track).

The Command Station Booster connects to the Main Track Bus, which is a pair of heavy gauge wires running along the under side of the layout. These Bus wires are

usually too heavy to connect directly to the Booster connections. Because of this, a couple of short sections on smaller wire is used.

1.- The Main Track bus.

The connection to the track is by two wires from the Command Station Booster. These wires take the form of a bus made up of two heavy gauge wires. (A bus is simply one or more wires that run around underneath the layout, and is a convenient place to take track power from.) The wire gauge used depends on how large the layout is, and how far the bus has to run. The larger the layout, the heavier the bus wire needs to be. Smaller wires are actually connected to the Track bus, then are routed up and connect to the track rails at various locations around the layout. These are called Track Feeders.

2.- Programming Track.

All DCC systems must be able to program a locomotive decoder. By programming the decoder, you can set it up to perform certain functions the way that you want them to. One of the functions is to change the address of the decoder and set it for the locomotive that it is going to control. The address is usually set to the locomotive number. The Programming track is a separate piece of track not tied to the layout. This section of track is also connected to the Command Station, but by separate wires, and not to the main track bus. The power supplied to the Programming track is not enough to run a locomotive, but just to test the decoder and program it. Most systems will also allow you to program a locomotive on the regular layout track. This is known as Ops Mode programming. Using the Programming track is known as Service Mode programming.

3.- Command bus.

This is a bus of smaller wire or cable that also usually runs around the layout that is plugged into the back of one or more Throttle Panels and originates from the Command Station. The hand held throttle that controls the trains is then plugged into the front of that panel. When you change the throttle setting or select a function, the signal is then sent down the Command Bus to the Command Station, where it is put on the track for the locomotive to receive and to perform the action selected. The Command bus can also be known as the Control bus or Throttle bus. On some systems, this is two separate busses. One may be called the Command Bus and the other the Cab Bus. In that case, the Cab Bus is the one that goes around the layout and the Command Bus is used to connect the Command Station with any Boosters.

4.- Throttle.

This is the part that you use to control the trains with. It plugs into the Throttle Panel. Some systems have the throttle built into the Command Station.

5.- Computer Interface

Some DCC systems have a Computer Interface connection on the Command Station. Depending on the system that you have, it may allow you to use a computer to program your locomotives and even run the trains. It may also be used to control other devices that connect to the control bus or track, such as Stationary Decoders that can change the direction of turnouts and do other things.

B. Booster

A "Booster" can also be used as an additional power source on a large layout. When the layout is divided up to use an extra Booster, the common term of this division is "Power District". The additional Booster will have a connection back to the main Command Station so that the digital signals on the track from the Booster will be in synchronization with the signals on the track from the Command Station. The rails or track from one Power District will be isolated from all other rails or track in all other Power Districts.

