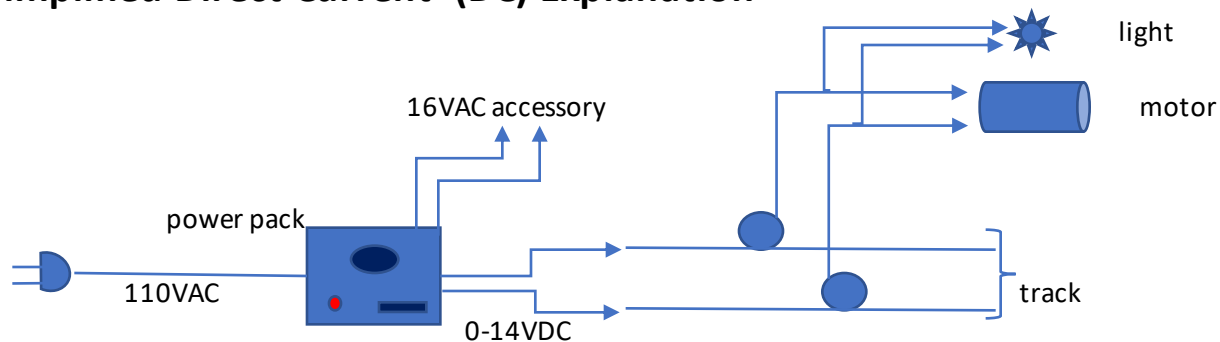
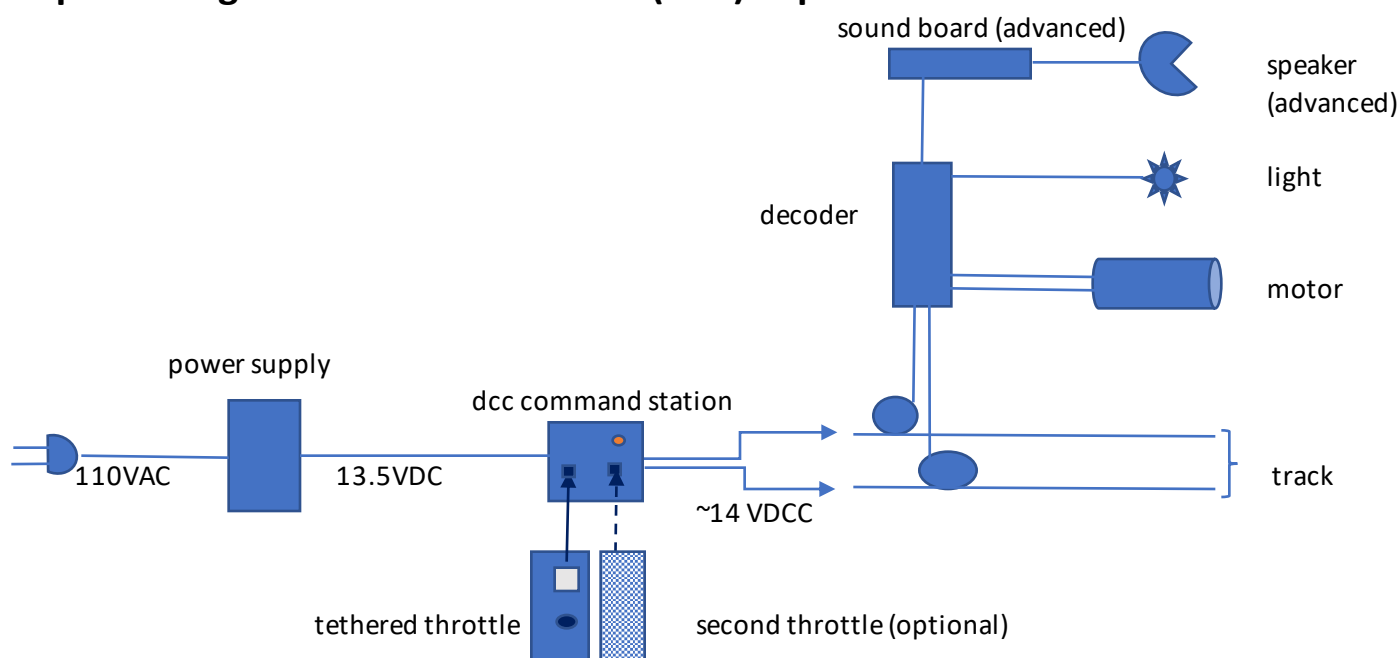


Simplified Direct Current (DC) Explanation



Knob on power pack increases/decreases power to track. Locomotive wheels transmit power to motor. Reverse switch on power pack reverses polarity to track thereby reversing direction. Only one locomotive can be run at a time. To run multiple locomotives you need to create separate blocks with their own power packs. HO trainsets come with a DC power pack. More advanced power packs can be purchased separately starting at about \$35.

Simplified Digital Command Control (DCC) Explanation



A constant 14 VDCC (approximate) is applied to the track at all time. VDCC is square wave AC. The frequency is modulated to embed a digital signal to the decoder which regulates power to the motor as well as operates the lights, bell, horn, whistle. In advanced applications it also controls the sound. Direction is also controlled by the decoder which reverses the square wave AC phase to the motor thereby reversing the locomotive. This allows multiple trains to run at the same time on the same section of track even in opposite directions. Many locomotives are sold with DCC already installed. Most older locomotives can be retrofitted starting at about \$25 for just operating and about \$125 for DCC with sound. Starter DCC power supplies start at about \$200 not including locomotives. DCC systems can be expanded for more locomotives and non-tethered throttle operation.