SOUNDTRAXX™

New Dimensions in Digital Sound Technology

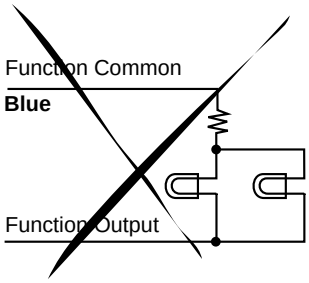
TECHNICAL NOTE

USING 1.5 VOLT LIGHTBULBS WITH SOUNDTRAXX DIGITAL SOUND DECODERS

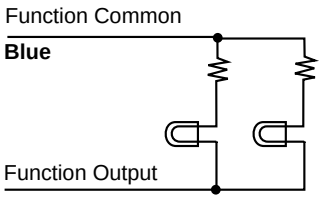
The DSD's function outputs typically work at track voltage levels. Thus, to use 1.5 volt bulbs, it is necessary to drop the voltage level using resistors or some other means. The DSD Owner's Manual recommends a nominal starting value of 560 ohms. A 560 ohm resistor assumes the bulb draws a 15mA current and the trackvoltage is nominally 14 volts. It is important to note that bulb current and track voltage vary from manufacturer to manufacturer and scale to scale. Changing any one of these variables, even slightly, will affect bulb performance - it could suddenly grow dim, burnout or never even turn on. The proper resistor value can be calculated by first measuring the decoder's output voltage. Connect a voltmeter to the DSD's blue wire and the function wire you wish to use. Turn the decoder function On, measure the voltage and use the following formula:

$$\text{Resistor Value (Ohms)} = \frac{\text{(Measured Voltage - 1.5 Volts)}}{\text{Bulb Current}}$$

It is important to also remember that you will need one resistor for each bulb. Connecting two bulbs in parallel, for example, will double the bulb current and require a resistor that is about 1/2 the calculated value. The problem with this scheme is that when one bulb burns out, the other immediately becomes bright and burns out shortly after.



WRONG!



RIGHT!

Another circuit can be used that uses diodes rather than resistors to regulate bulb voltage and has the advantage that more than one bulb can be connected to the same circuit (you will still need a seperate circuit for each function output though) and bulb brightness stays constant even when track voltage does not. It requires a few more parts but is trouble free and well worth the effort.