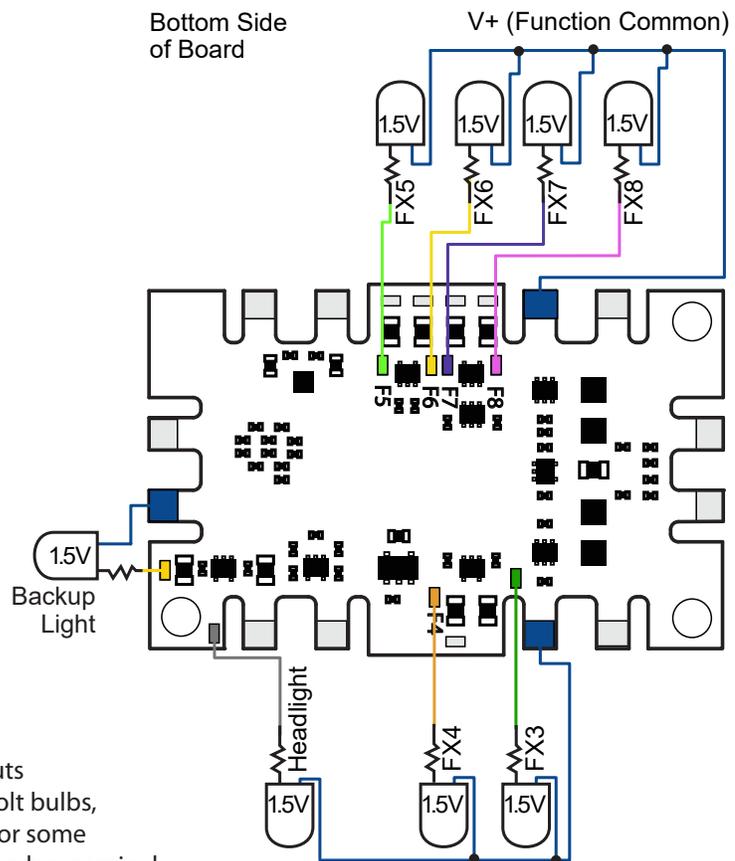


Technical Note #31

Using 1.5V Incandescent Bulbs with the Tsunami2 TSU-BH2 Digital Sound Decoder

The TSU-BH2 is a plug and play Tsunami2 Digital Sound Decoder intended as an upgrade to HO-Scale Bachmann Steam Sound Value locomotives.

Use the VERTICAL solder pads (shown in the wiring diagram) for function connections when using 1.5V incandescent bulbs. The colors in this diagram are only used to clearly mark which function connection goes to which solder pad.



Note: Tsunami2 Digital Sound Decoder 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 Tsunami2 Owner's manual recommends a nominal starting value of 560 ohms. A 560 ohm resistor assumes the bulb draws a 15mA current and the track current is nominally 14 volts. It is important to note that the 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, burn out, or never turn on. The proper resistor value can be calculated by first measuring the decoder's output voltage. Connect a voltmeter to the decoder's blue wire and the function wire you wish to use, turn the decoder's function ON, measure the voltage, and use the following formula:

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

It is important to also remember that you will need one resistor for each bulb. Do NOT connect two bulbs in parallel. This will double the bulb current and require a resistor that is about ½ the calculated value. The problem is that when one bulb burns out, the other immediately becomes bright and burns out shortly after.

Other Tsunami2 TSU-BH2 Lighting Wiring Diagrams:

To use LEDs with the Tsunami2 TSU-BH2 refer to Technical Note 29.

To use 12V bulbs with the Tsunami2 TSU-BH2 refer to Technical Note 30.