

MODEL 821A PWM MODEL RAILROAD THROTTLE

The model 821A PWM model railroad throttle has been designed for use with any scale DC model railroad system. Like it's predecessor the model 820, this throttle has been designed to provide unparalleled performance in both switching and mainline usage. It is easily installed and requires no maintenance. Please follow these instructions for installation and modifications to enhance your operational enjoyment.

INSTALLATION

The model 821A needs a supply voltage source to work. The supply voltage can be 12 to 24 volts AC or DC. The ability to operate from DC power source makes this throttle especially attractive for outdoor operating situations with battery supply (eg. automotive batteries). Applying voltages above the recommended limits can damage the throttle. Voltages below the recommended limits may result in erratic or unreliable operation. The power supply must be able to supply enough current to allow reliable operation to your layout. A supply rated for 3 amps is recommended, however, you can get away with less if you don't expect to draw the 3 amp maximum. Be warned though, a power supply rated for less than 3 amps can be permanently damaged if the output of the throttle is shorted during operation. Be sure to fuse the power supply's output terminals to protect the supply. If you are unsure of how to do this consult an electrician or an electronics technician. Connect the supply voltage to terminals 5 and 6.

If you have a common rail blocked system and plan to use more than one throttle an individual power supply must be used for each throttle. If you have a fully isolated blocked system (both rails gapped) multiple throttles can be operated from one supply source. Again, be sure the power supply is capable of supplying ample current to operate all of the throttles.

The large aluminum heat sink can become very hot during normal operation and will become especially hot in the case of overloads caused by a short applied to the tracks or throttle output terminals. The printed circuit assembly should be mounted so that adequate air flow is available to help cool the heat sink. Do not touch the heat sink unless you are sure it has not become too hot to touch.

The printed circuit assembly can be mounted with #6 hardware at each of the four corners of the board. If you plan to mount the PCB on a metal surface spacers should be used in order that the soldered side of the circuit board clears at least $\frac{1}{4}$ " above the mounting surface.

ALWAYS DOUBLE CHECK YOUR CONNECTIONS TO ENSURE SAFETY !!!

TRACK CONNECTIONS

The throttle's output appears at terminals 7 and 8 connect to the track. Be sure your connections are solid and that wires are not frayed. Use stranded 18AWG minimum insulated wire and make sure the insulation is not cracked or compromised in any way that will cause a short circuit.

CONTROL HANDSET CONNECTIONS

Refer to figure 1 for handset connections to the printed circuit board. If you are using the optionally available 851HS handset follow the color code beside *figure 1*. If you plan to construct your own handset follow the connections as per the diagrams included.

