



Electronics for Model Railroads

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CHANGING THE ML-1 OR DL-1 FLASH RATE

The Circuitron Mars Light and Ditch Light circuits utilize a very simple oscillator circuit using a single CMOS Multivibrator IC. This IC allows the use of a single resistor and capacitor to set the flash rate. By default, the duty cycle is about 50% which is ideal for use as a Mars Light or Ditch Light circuit. The only difference between the ML-1 (or ML-2) and the DL-1 is the value of the timing resistor. On the ML-1, the resistor is a 1,000,000 ohm (1.0M) value. This provides about 1 oscillation per second. The DL-1 uses a 1.8M resistor which provides a somewhat slower flash. These resistors can be changed to any value between 47K and 4.7M (4,700,000 ohms). Lowering the resistor value will speed up the flash and increasing the resistor value will slow it. The amount of change will be almost proportional to the value change, that is, doubling the resistor value will about double the time of each oscillation and decreasing the resistor to 1/2 the original value will shorten the time of each oscillation to about 1/2 of the original. If desired, a variable resistor (trimmer) can be substituted for the fixed resistor on the board. A 5 meg trimmer will give a very wide range of oscillations between 4 seconds and VERY FAST.

Connect the trimmer to the board by carefully removing the resistor with desoldering braid (available from Jameco) and solder two short light gauge wires into the holes. Then attach the other end of the wires to the center terminal and one of the outside terminals on the trimmer.

Set the trimmer at the midpoint of its rotation before powering up the circuit. Move it slowly until the desired speed is attained. **CAUTION: AT ONE END OF THE ROTATION, SPEED WILL INCREASE DRAMATICALLY AND IF YOU GO TOO FAR, THE CIRCUIT WILL LOCK UP AND STOP OSCILLATING. RETURN TO THE CENTER POSITION TO START IT FLASHING AGAIN.**