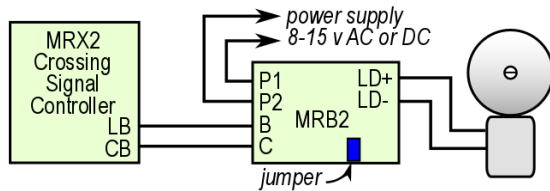


## Azatrax MRB2 Bell Ringer / Strobe Light Pulsar Installation Instructions

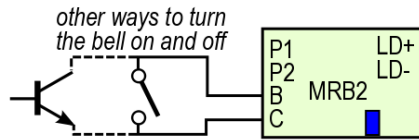
The MRB2 bell ringer / strobe flasher circuit adds sound or lighting effects to your model railroad or diorama. It can drive a mechanical bell (door bell or door chime) for railroad sound effects, or lights to produce a strobe light or beacon effect.

### Connections - Crossing bell

Remove the jumper on the circuit board, or place it so it is on only one of its two mounting pins (this is how it ships from the factory). Connect the MRB2 to an Azatrax MRX2 Crossing Signal Controller as shown above. Connect the bell to the + and - LD (Load) terminals. Power supply should have an output current rating of at least 0.6 amp (or higher, depending on the bell). Some bells draw heavy current spikes that may interfere with the crossing controller operation. In this case, use one power supply for the crossing controller and a separate power supply for the MRB2 and bell.



Other means of turning on the MRB2 bell/strobe circuit are shown here. Connecting 'B' to 'C' via a switch, relay, transistor or open-collector logic gate will start the bell or flashing lights. Only 1 mA flows from 'B' to 'C'. Disconnecting 'B' turns off the bell or lights.

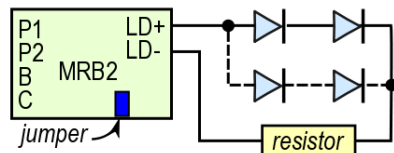


**Choosing a bell** - The MRB2 is designed to use a common low voltage door bell or door chime available from hardware stores and building supply centers. Examples:

- 2.5 inch doorbell: Carlon DH922, Ace Hardware 36486
- 4 inch doorbell: Ace Hardware 36487, Heath 174C-A
- 2-tone door chime ('bing-bong'): Ace Hardware 36456, Carlon DH110 or DH120, Heath 95B-B

### Connections - Strobe lights

Small, super bright white LEDs can be used to simulate strobe lights on modern antenna towers and tall smoke stacks. Remove the jumper on the circuit board, or place it so it is on only one of its two mounting pins (this is how it ships from the factory). With the jumper in this position, the



LEDs will flash with a fast on/off pulse. Use a flash rate of once every 1 to 2 seconds. Or, put the LEDs inside a scale structure and turn up the flash rate for a disco effect.

**\*\* ALWAYS use a series resistor with LEDs \*\***

Suggested resistance with a 9 volt power supply:

- with one pair of white LEDs in series: 33 ohms
- with two pairs of white LEDs: 15 ohms

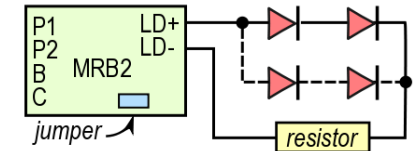
For a 14 volt power supply:

- with one pair of white LEDs in series: 150 ohms
- with three white LEDs in series: 50 ohms
- with two pairs of white LEDs: 75 ohms

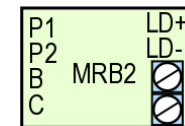
On / off control is the same as for the bell circuit (see other side).

### Connections - Beacon lights

Red or yellow LEDs or mini incandescent bulbs can be used to simulate the older style of beacon lamps on antenna towers, tall smoke stacks, airway beacons or light houses. These lamps exhibit a gradual on/off effect. Place the jumper on the circuit board so it connects both of its two mounting pins. With the jumper in this position, the LEDs will flash with a 'soft' on/off effect at a slower rate than the Strobe setting.



**Always use a resistor with LEDs.** For use with red LEDs, we suggest using resistors with about 20% higher resistance than those listed above for white LEDs. Incandescent lamps do not need a resistor if the lamps are rated for the power supply voltage or higher.



### Adjustments

Two adjustments are available on the MRB2 circuit board. '**Rate**' adjusts how often the bell is struck or the lights are flashed. In **Bell/Strobe**

mode the available rate is 4 times per second to once every 4 seconds.

In **SoftBeacon** mode, the available rate is twice per second to once every 8 seconds.

'**Inten**' adjusts the intensity of the bell or light flash. It varies the length of time that the bell is energized for each strike, or the length of time the lights are on for each flash.

See [www.azatrax.com](http://www.azatrax.com) for more information and assistance.

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