

This board provides a compact, easy to assemble, inexpensive module to alternately flash 2 or more LED's, in a wig-wag fashion. It's easily capable of up to 100 ma load, can be powered by 5-12 volts AC or DC. It can operate up to 6 LED's connected to each output; eg six 2 headed signals, or two 4 headed signals plus two 2 headed signals. It uses an NE555 DIP-8 timer chip to generate a precise timing signal which can be adjusted using an onboard trim pot. The flash rate can be easily varied from 4 Hz to about 1.1 Hz using the trim pot. Once set the cycle speed is not affected by changing load or supply voltage.

The main application is trackside rail crossbuck signal heads, but it could also be used in an engine for flashing ditch lights, or in a building for flashing marquee lights, or anything similar. Control is simply by on-off power switching using a 153IR, relay, or other similar means. Once powered the module immediately starts flashing. **NOTE: This module cannot be used directly with common anode or common cathode wired leds. The leds must be separately wired to the flasher module.**

The board is a very compact size; 36mm x 30mm. There are only seven components, and easy thru-hole assembly. Board material can be 1.6 or 0.8 mm thick with 1 oz copper. Three 2-pin 0.1" pitch headers accommodate input and output connections.

D1 is a standard 1 amp DB107G bridge DIP diode to rectify AC to DC. DC can be connected directly and polarity is unimportant. C1 can be a 220 uF or larger 25 vdc electrolytic, but 220 uF is adequate. If the input is DC, you don't need D1 or C1 at all, simply jumper across the D1 inputs to outputs, but in this case be sure to observe polarity. R5 is a Bourns 3362P style trim pot, Digikey [3362P-204LF-ND](https://www.digikey.com/product-detail/en/bourns/3362P-204LF-ND/3362P-204LF-ND)

R1/R2 are nominal 470 ohm ballast resistors, sized for one LED on each output and 9-12 volts DC input. For lower supply voltages you can change them to lower values such as 200 ohm for a 6 Vdc supply. Use the reference Excel sheet for target values for R1/R2 for various supply voltages and numbers of LEDs connected.

You have a great number of options for making connections to the board. It accepts most styles of 0.1" pitch (2.54 mm) 2 pin input and output headers (eg. Dupont or SPOX), or common 0.1" pitch no-name green screw terminal blocks, plus many others.

It can also be hard-wired directly using up to 22 AWG solid or stranded wire.

It can also be used with pre-wired Mini JST 1.25 male/female 2-pin or similar connector pigtail.

Using all domestic components and OSH Park boards, the total cost is about \$5.89 each.

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