

## Blue Lite Special William Grill

Wanting to draw attention to yourself? Maybe you need is big neon sign, loud music and a provocative attitude. If that's not your style how about a simple rotating beacon of light to attract attention?

Recently, at a trade show I was amazed how many really un-inspiring booths there were. Not enough electronic gadgets to suit me. So why not add a gadget to bring attention to your rolling stock, painted dishes or handmade teddy bears. Whatever you are pitching. If you are not pitching anything but want the pizza delivery guy to find you while it's hot just hang this 'blue light special' in the window.

The project is made with a few choice parts and based on an inexpensive controller. Cost is ~ \$15.



Built around a MicroChip 16F505 controller the application uses a single button to set the rate of two rotating arrays of a 8 LEDs. Using PVC or metal tubing the beacon can be mounted in almost anything. For packaging I traded my first choice of a small pickle jar because it would make for good conversation, for a perfectly partitioned pimiento jar, in my prototype.

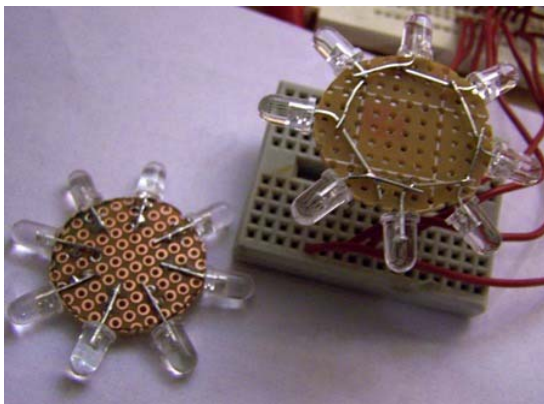


The low parts count make for a simple project with many flexible assembly options, but be sure that whatever enclosure or jar you decide on, the array assembly, shown below

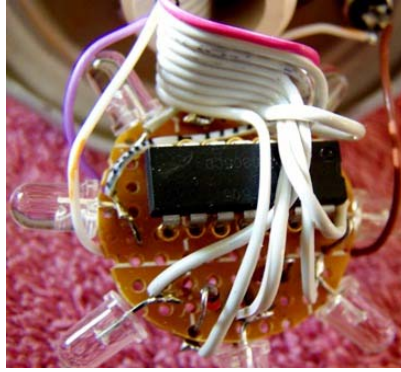
will fit through the jar's mouth. Looking at the picture you can see the basic construction. The project should fit with enough space for the LEDs the ½" PVC and the 1 button switch.



To provide a more dramatic beacon display I am using a set of White and Red LED arrays.



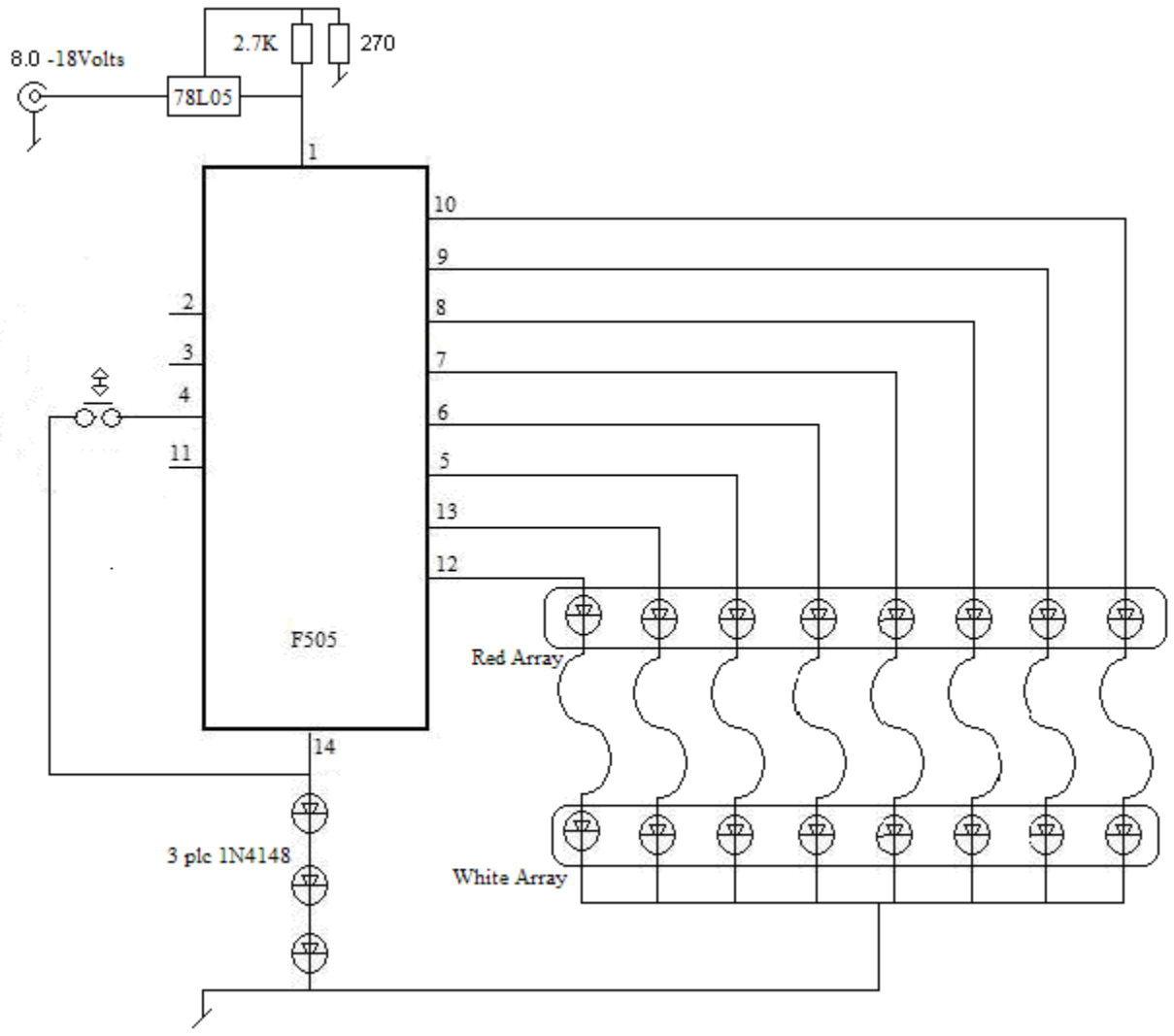
Selected for their ~5000mcd (20ma) characteristics, costing about 40 to 70 cents apiece these are the big hitters in the project. The LED arrays



shown are assembled nearly identically and only a few additional hardware parts are required to support these dual arrays.

Referring to the schematic, these arrays are wired in series, driven directly from the controller and were oriented in their jars, to produce a contrasting CW and CCW red and white rotating beam, 180 degrees out of phase. I used a 9 wire width flat ribbon cable between jars to connect the two arrays.

Three LEDs, in both the white and red 8 LED set sequences are powered during every beacon step. Power from the controller is managed by driving the center active LED to full duty cycle while the adjacent 2 LEDs are PWM controlled to less than  $\frac{3}{4}$  power. While not necessary to restrict the total controller output power, as designed, this provides some beam shaping and power loading margins at the controller. The application's power is intended to be derived from a regulated common 9 to 12volt, isolated wall based regulator.



The schematic includes an inexpensive 78L05 regulator and series wired LED arrays. The LEDs each wanted up to 3.3 volts. The regulator is set to provide ~6.1 volts across the two arrays and the 3 diodes assure that no more than 5 volts of that is applied across the controller.



The button is mounted on the jar's plate, shown above, associated with the controller and other components. The step rate defaults to ~1 complete beacon revolution per second. The momentary button indexes a loop parameter in the controller and is intended to decrement the beacon step rate through a fixed indexing scheme and then roll over the higher default step rate value. This button is debounced in the code.

Simple code changes could make this beacon step rate characteristic any desired value or default rate you would otherwise want and could eliminate the need for an index button completely. The controller operation takes advantage of the 12F505's internal 4MHz oscillator. The controller's code is provided as ready to use assembly language listing.

A single array configuration would also make a nice display and would eliminate the diodes and possibly the regulator. The provided voltage to the hardware would also have to be reduced to 3.3 to 3.6 volts.