http://www.markshauntedgarage.com/halloween/techinfo/fogger_timer/

Custom fogger timer

On Halloween night, I reguarly have periods of 5, 10, and even 15 minutes where no ToTs are around. It seemed kind of silly to me to have the fogger spewing fog during such breaks by using a standard fogger timer. Instead, I decided to build my own custom fogger timer.

I picked up an IEC extension cable, which has the kind of connector my fogger control button has. I cut the other end of the cable off so that I could get at the wires.

Next, I opened up button controller that came with the fogger. Using my multimeter in "continuity check" mode, I determined which 2 pins of the connector were connected to either side of the button in the controller. I have no idea how standard this configuration is, but in my case, it was the middle pin and the right pin, as indicated in the picture:

Now, using the multimeter again, determine which 2 wires on the extension cable match up with those same 2 pins from the original connector. These are the wires that need to be connected to one side of a relay. It doesn't matter which wire goes to which pin of the relay.
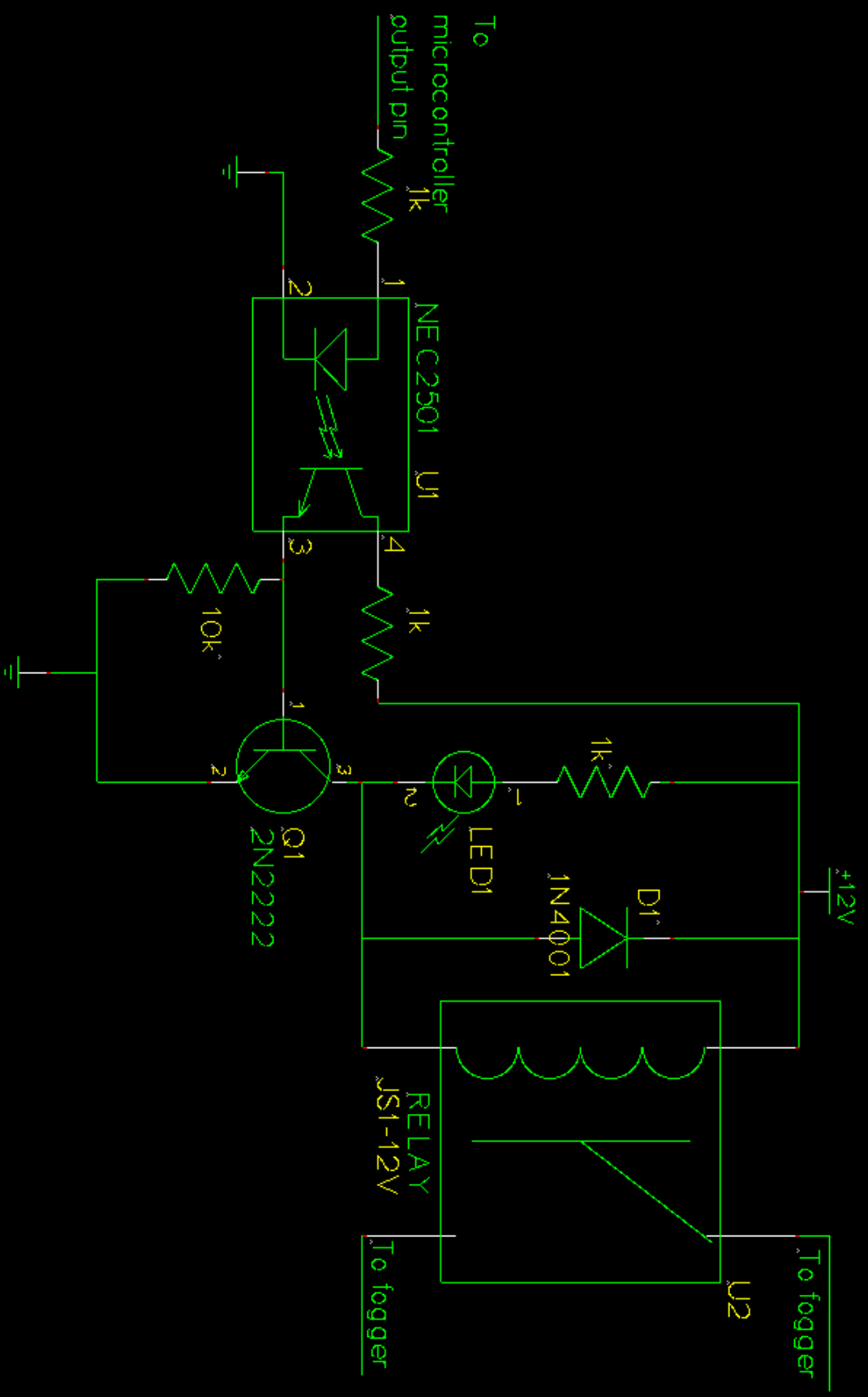
Since 110V runs through this cable, I didn't want the r relay pins exposed so that they could come into contact with anything, so before soldering the wires onto the relay, I purchased a plastic electrical box and ran the wires into that. I then soldered the 2 wires onto the relay. I also soldered 2 short control wires onto the pins connected to the coil of the relay. I soldered the other ends of the control wires onto the pins of a terminal block that I mounted on the side of the electrical box, drilling a couple of small holes for the pins of the terminal block to pass through. I also soldered a diode across the 2 pins of the coil of the relay.
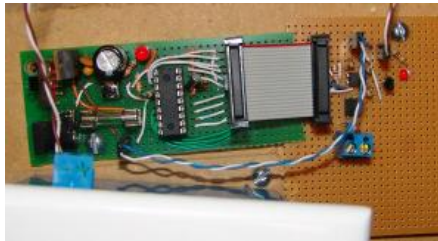

Once all this was soldered up, and I had verified that the connections were good, I glued the relay, pins up, to the bottom of the electrical box. Then, I coated all the exposed metal with "Liquid Electrical Tape" to help protect everything just in case something ever pulled lose.
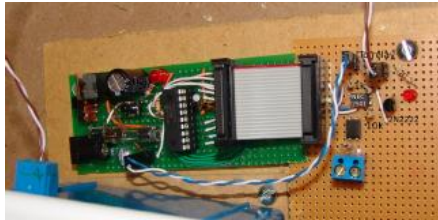
The schematic for the circuit to control the relay is: Basically, the way it works is this: When voltage is applied to the pin labeled as "To microcontroller output pin", the LED inside the optoisolator (the NEC 2501) turns on. This causes the transistor in the other half of the opto to start conducting. This causes current to flow through the base of Q1, a 2N2222 transistor, which causes it to start conducting. This closes a path to ground for both the LED and the relay coil, which turns them both on.

I am using a PIC16F84 to control the circuit below. I would have liked to have used some potentiometers to control on and off times, but I was having difficulty getting those working, so I simply hard-coded the on and off times into the PIC. The only other input I have going to the PIC is my "standby indicator". There is a push button just inside the garage door. When pushed on, a voltage is applied to wires going throughout the garage. Most of my props look for this signal. If this signal is absent, the prop doesn't fire. In other words, the props will only fire if the standby indicator is on. The fogger timer will work similarly. As long as the standby indicator is off, the fogger will never run. When the standby button is pressed, the fogger will fire for some number of seconds (currently 30, but I may need to adjust it after performing some tests). After that, it will turn off and on at predetermined intervals until the standby button is switched off.

To
microcontroller
output pin

1k

NEC2501 U1

1k

10k

Q1
2N2222

LED1

1k

1N4001 D1

+12V

RELAY
JS1-12V

To fogger

To fogger

U2

Here's a couple pictures of the whole thing. The white blob at the bottom is the electrical box holding the relay. The relay itself is not visible