Economy Turn ON Timer

By G8MNY (New Feb 07)

(8 Bit ASCII Graphics use code page 473 or 850)

I was asked to develop a circuit that would press the washing machine on button after midnight, to use the cheaper electricity. This circuit was needed as the new fangled micro processor model would not work from a plug timer like as the old one did with a clockwork control.

This is what I came up with...

```
        Xrated                          | Double insulated
         u47      1N4006  +             | Lead to machine            Wired
Live>──┤├──────┤>├──┤├──────────────────────────────┬+              across
from   │     _|_  |        10u         |            │              \___> washing
timer  1M   /_\ ===1u5    250v  |+     |       48V┌──┐      o         machine's
       │  1N4   |250V 330k    ===4u7   |       Dil  │15k   │         TAC ON
       │  006   |          |   63v    |      Relay │      └──────> Switch
  N >──┴────────┴──────────┴──────────┴────────────┴
     Built in an old plug top PSU case |
```

A 24 hour timer is still used to control the adjacent tumble dryer & it is set to start at 01:00 AM & stop at 21:00 if washing is preloaded ready. So I used this timer system to initiate a short ON pulse to the permanently powered washing machine's ON button.

When playing with wiring to micro processors stray signal pickup & spikes must be avoided so the contacts of a small high voltage relay is used to mimic pressing the on button. Although an opto isolator would work just as well in many circuits, you have to know which round to wire it to the TAC switch etc.

The relay is mounted very near the switch ensure there is no stray signals on the wires.

CIRCUIT OPERATION

On applying mains, the voltage ratio attenuator of the mains X rated cap (250V 50Hz) & the 1u5 (250V DC) cap reduce the 230V mains by a 1/4. The 2 diodes form a voltage doubler to give about 120V DC peak. This is fed through the 10uF 250V electrolytic to the low current 48V relay which operates. (N.B. some relays have internal back emf diode!)

The 4u7 63V electrolytic just stops the relay buzzing with the 50Hz pulses. After about 2 seconds the 10uF charges up & the relay releases.

The 1M across the mains discharges the u47 to stop shocks when the plug is removed. The 330k discharges the 10uF in a minute or so to enable a retrigger for testing. (not needed over 24hr!)

The power consumption is very low at 100mW, much lower than the possibly safer plug top PSU & a timer circuit design that would take about 4W.

(P.S. Most of the components you will find in a scrap TV/SMPSU)

Why don't U send an interesting bul?

73 de John G8MNY @ GB7CIP