



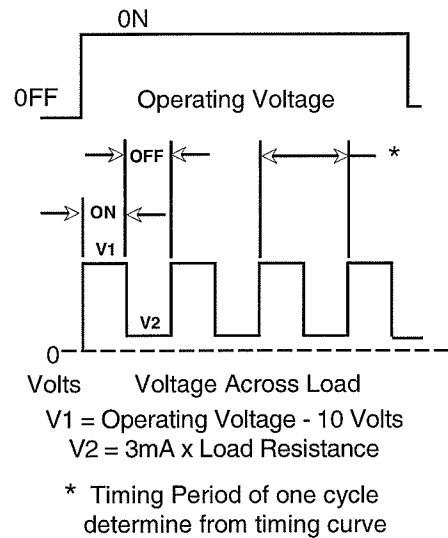
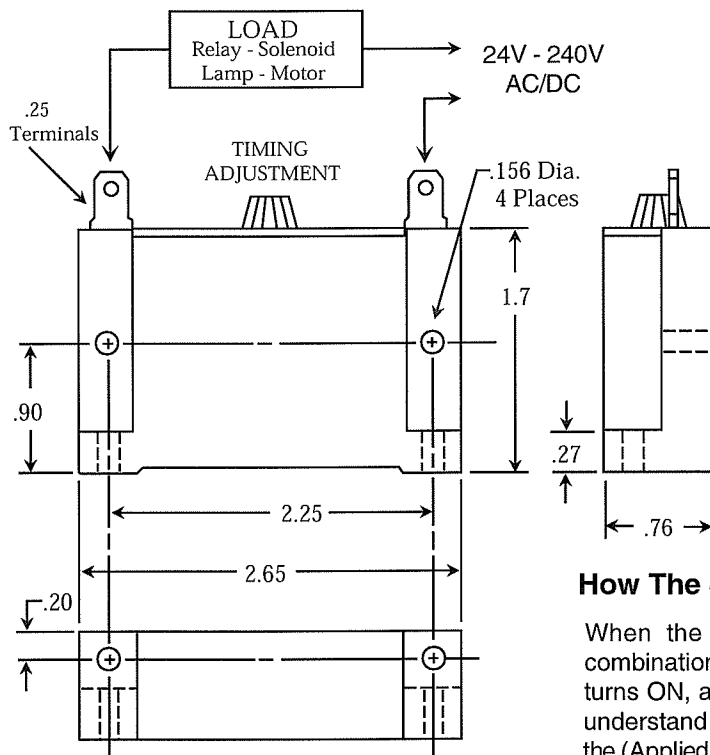
# Solid State Timers and Controllers

## 438UPF Universal Potentiometer Adjust Flasher



The Model 438UPF is an in-line solid state timing device that performs as a two terminal flasher, or a 50% repeat cycle timer. When connected in series with a load circuit, the 438UPF will turn the load circuit ON and OFF at a 50% duty cycle at the flashing rate determined by an internal adjustment potentiometer, which controls the flash period from 2 to 960 seconds. The flash rate can be made to vary from 30 flashes per minute (1 flash every 2 seconds) to 1 flash every 960 seconds. The 438UPF operates at voltages ranging from 24 to 240 volts AC or DC, and services inductive load circuits, as well as lamp circuits up to .25A. For other Artisan Controls In-Line Flashers, see models 438UF, and 438USAF.

### Mechanical ..... Timing Diagram .....



### How The 438UPF Works .....

When the operating voltage is applied to the series combination of the 438UPF and the load circuit, the 438UPF turns ON, and the load will be energized. It is important to understand that the load current that flows is determined by the (Applied Voltage - 10 volts) divided by the load resistance. The 10 volts is the maximum voltage that will be dropped across the 438UPF at any operating voltage. As an example: a 440Ω (ohm) relay coil that would normally draw 250mA at

110V DC will now only be permitted to draw 227mA. This is determined by the voltage across the relay which becomes 110 - 10, or 100V DC (V1). At 100V, the current becomes  $100V/440\Omega = 227mA$ . At the end of the ON portion of the flashing cycle, the 438UPF turns OFF, but leakage current continues to flow. This leakage current can be as high as 3mA. This would cause the relay to have  $3mA \times 440\Omega = 1.32V$  (V2) across it. Always make certain that the dropout voltage of the load circuit is below the voltage caused by the residual leakage current. At the end of the OFF portion of the flashing cycle, the load turns back ON. This action continues for as long as operating voltage is applied. The time of the ON portion of the cycle will always be equal to the time of the OFF portion of the cycle. In this manner, the 438UPF can also be used as a repeat cycle timer if the application can withstand the 50% duty cycle restriction.



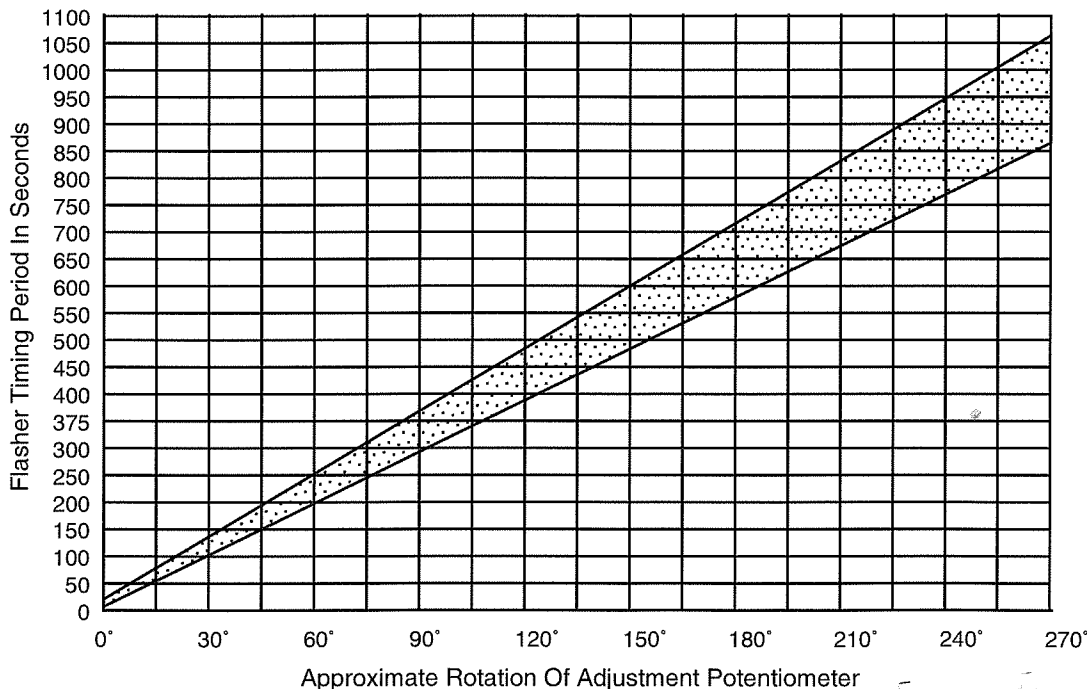


# Solid State Timers and Controllers

## Specifications

- Operating Voltage:** 24V - 240V AC/DC 50/60Hz.
- Timing Mode:** Flasher - Load turns ON for 50% of the flashing timing period.
- Period (Flash Rate) Timing Control:** Internal potentiometer controls flashing period from 2 to 960 seconds. Within the flash period, the load is ON for 50% of the time.
- Timing Tolerance:**  $\pm 15\%$ . Flasher timing period is essentially linear between 2 and 960 seconds permitting the potentiometer to approximate the value of timing over its adjustment span of  $270^\circ$  to within 10% of the desired period.
- Timing Variation:**  $\pm 2\%$  at any combination of operating voltage and temperature.
- Repeatability Of Flashing Period:**  $\pm 1\%$  nominal.
- Recycle Time:** 200 milliseconds if the load is required to turn ON as soon as the operating voltage is re-applied. If this is not a requirement, then the recycle specification is not applicable.
- Output Rating:** .25A inductive with inrush current to 8 amperes for 8 milliseconds.
- Output Voltage Drop in "ON" State:** 10 volts max. voltage drop across the 438UPF during the ON portion of the flashing period at any operating voltage and load current to .25A.
- Leakage Current in "OFF" State:** 3 milliamperes maximum at any operating voltage and load circuit.
- Transient Protection:** Maximum transient voltage protection is 6000 volts as delivered through a source resistance of 30 ohms with a maximum duration of 8.3 milliseconds.
- Operating Temperature:**  $-20^\circ\text{C}$  to  $+85^\circ\text{C}$
- Humidity:** 95% condensing
- Terminations:** Two (2) .25 Faston type.
- Data Sheet Revision Date:** September 28, 1995

## Potentiometer Setting vs Flashing Period



## Ordering Information

Part Number	Time Range	Operating Voltage
438UPF	2 - 960 Seconds	24V - 240V AC or DC

