



# Solid State Timers and Controllers

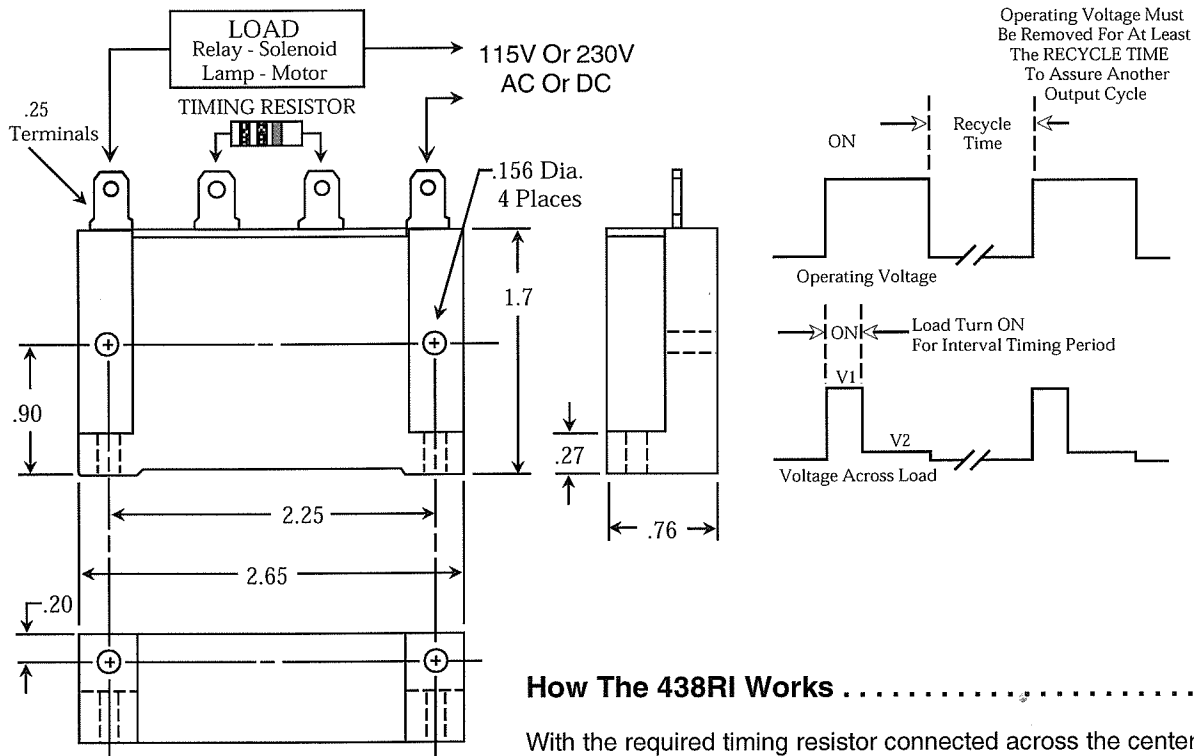
## 438RI

### Remote Adjust Interval Time Capsule®



The Model 438RI is an in-line timing device that performs as a two terminal interval timer. Operation is exactly the reverse of the standard Artisan Controls Corporation's 438A Time Capsule®. When connected in series with a load circuit, the 438RI will energize the load when operating voltage is first applied, turning off after the externally set interval time delay period. The interval timing periods is controlled by an external resistor, and controls the timing period from 1 to 1,000 seconds. The interval timing action can be repeated by removing and re-applying the operating voltage. The 438RI operates at fixed voltages of either 115V or 230V. Both the 115V and the 230V model can operate on both AC and DC voltages and control load circuits to .25 amperes.

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



### How The 438RI Works .....

With the required timing resistor connected across the center two terminals of the 438RI and a load circuit connected in series with the specified operating voltage, the circuit is ready for operation. When the operating voltage is applied to the series combination of the 438RI and the load circuit, the 438RI 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 438RI at a full .25A of load current. 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/440Ω = 227mA. At the end of the timing interval the 438RI turns OFF, but leakage current continues to flow. This leakage current can be as high as 3mA. This would cause the relay to have 4mA x 440Ω = 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.

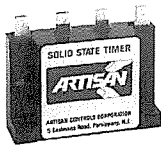


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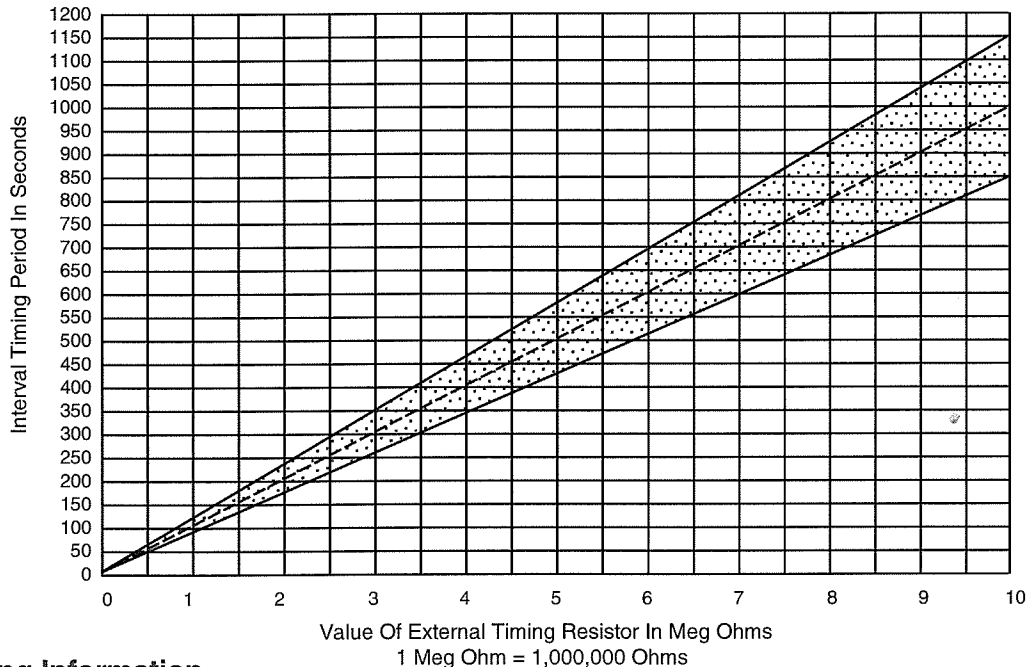
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## Specifications



- Operating Voltage:** 115V or 230V AC/DC 50/60Hz. Specify when ordering.
- Voltage Tolerance:** 115V model operates over the voltage range of 100V to 160V AC or DC. The 230V model operates over the voltage range of 150V to 250V AC or DC.
- Timing Mode:** Interval - Load turns ON with application of operating voltage then turns OFF after delay period.
- Timing Range:** External resistor control from 1 to 1,000 seconds.
- Timing Adjustment:** 0  $\Omega$  to 10 Meg  $\Omega$  covers the range of 1 to 1,000 seconds, at approximately 10,000  $\Omega$  per second.
- Timing Tolerance:**  $\pm 15\%$  of calculated resistor vs timing value.
- Timing Variation:**  $\pm 2\%$  at any combination of operating voltage and temperature.
- Repeatability Of Timing Period:**  $\pm 1\%$  nominal.
- Recycle Time:** 200 milliseconds.
- Output Rating:** .25 ampere inductive with inrush current to 8 amperes for 8 milliseconds.
- Output Voltage Drop in "ON" State:** 10 volts maximum voltage drop across the 438RI at any operating voltage and load current to .25 ampere during an interval timing cycle.
- 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:** Four (4) .25 Faston type.
- Data Sheet Revision Date:** September 28, 1995

## External Resistor Timing Curve



## Ordering Information

Part Number	Time Range	Operating Voltage
438RI - 115	Remotely Adjustable From 1 To 1000 seconds	105V - 135V AC or DC
438RI - 230		200V - 288V AC or DC