

# HEAVY CURRENT TIMING RELAY

LOW COST OPEN BOARD CONSTRUCTION  
**30 AMPERE**                      **2HP RATED**  
**Series 686E – PROGRAMMABLE RECYCLE**  
**SOLID STATE**                      **CMOS DIGITAL CIRCUITRY**

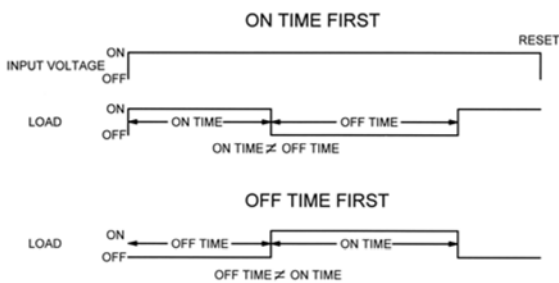
- Environment Protected
- Tamper Proof Relay
- No False Operate
- Enclosed Relay SPDT
- Small Size – 2.437" x 3.962" x 1.5"
- Lightweight – approximately 2.5 oz.
- Rugged 4 Hole Mounting
- Transient Protected to 6000V

**HORSEPOWER RATED**

Application of input voltage starts timing and turns the load ON. The load remains ON for the preset time and then turns OFF and remains OFF for the preset OFF time. Cycling ON/OFF will continue until power is removed. The ON & OFF times are independently adjustable. Interruption of the input voltage resets the time to T = 0. The unit is available with the OFF time period first, see below.

Control the timing of high power electric heaters, HP motors, lamps, transformers and other high current loads rated less than 30 amps Resistive. CMOS digital circuitry is combined with high current output relay contacts. P/C board and components are covered with a moisture resistant coating. Wiring terminals are ¼ quick connect. Available in all standard voltages and frequencies. Fixed or adjustable timing from .1 seconds to 24 hours.

**TIMING DIAGRAM**



**SPECIFICATIONS**

1. Repeat Accuracy: ± 0.25%
2. Combined Effect of Temperature and Voltage upon Repeat Accuracy: ±2% of Setting
3. Reset Time: 150 ms.
4. Operating Voltage Tolerance: ± 20%
5. Load Current: 30 Amps Resistive at 120/240VAC or 28VDC,  
1HP @ 120VAC, 2HP@ 240VAC
6. Dielectric Strength: 1500 VRMS
7. Insulation Resistance: 100 Megohms Min.
8. Input Transient Protection: 3000V 120V UNITS, 6000V 240V UNITS
9. Temperature Ambients: Operating -40°C to +70°C Storage -55°C to +85°C
10. Humidity-Operating: 95% Relative
11. Linearity(Option A ): ±5% Minimum from 10% to 90% of range
12. Timing Tolerance: ±9% + Tolerance of Rt Std., ±5% Special (Fixed)

**HOW TO ORDER**    686E - (T1) (T2) (V) (P1) (P2)  
686ER (T1) (T2) (V) (P1) (P2)

SERIES	(T1) = ON TIME RANGE	(T2) = OFF TIME RANGE	(V)=VOLTAGE	(P1) = ON TIME OPTIONS (P2) = OFF TIME OPTIONS
<b>686E</b> ON FIRST  <b>686ER</b> OFF FIRST	P = 0.1 - 5 SEC. 1 = 0.1 - 10 SEC. L = 0.2 - 20 SEC. J = 0.3 - 30 SEC. M = 0.6 - 60 SEC. 2 = 1 - 100 SEC. K = 1.2 - 120 SEC. F = 2 - 180 SEC. E = 3 - 300 SEC. 3 = 10 - 1000 SEC. 4 = 0.1 - 10 MIN. G = 0.3 - 30 MIN. H = 0.6 - 60 MIN. 5 = 1 - 100 MIN. V = 3 - 300 MIN. 6 = 10 - 1000 MIN. D = 1 - 24 HRS.	P = 0.1 - 5 SEC. 1 = 0.1 - 10 SEC. L = 0.2 - 20 SEC. J = 0.3 - 30 SEC. M = 0.6 - 60 SEC. 2 = 1 - 100 SEC. K = 1.2 - 120 SEC. F = 2 - 180 SEC. E = 3 - 300 SEC. 3 = 10 - 1000 SEC. 4 = 0.1 - 10 MIN. G = 0.3 - 30 MIN. H = 0.6 - 60 MIN. 5 = 1 - 100 MIN. V = 3 - 300 MIN. 6 = 10 - 1000 MIN. D = 1 - 24 HRS.	1 = 12VDC 2 = 24VDC 3 = 48VDC 4 = 24VAC 5 = 120VAC 6 = 240VAC 7 = 110VDC	O - CUSTOMER SUPPLIES OWN POTENTIOMETER OR RESISTOR A - POTENTIOMETER SUPPLIED AS LOOSE PART *C - FACTORY FIXED W - ON BOARD POTENTIOMETER WITH WHEEL  <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: fit-content;"> <i>* For Fixed Time Specify The Value In Seconds, Minutes, Or Hours</i> </div> <p style="text-align: right; margin-top: 20px;"><b>MADE IN USA</b></p>

**EXAMPLE P/N: 686ER356OC/60M** This is a SPDT, PROGRAMMABLE RECYCLE 30A Rated Solid StateTimer with a 1-100 second ON time and a factory fixed 60 minute OFF time. The off time is first. The input voltage is 240 VAC. The customer will supply his own potentiometer to adjust the ON time.



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**TECHNICAL BULLETIN**

**SOLID STATE TIMING MODULE**

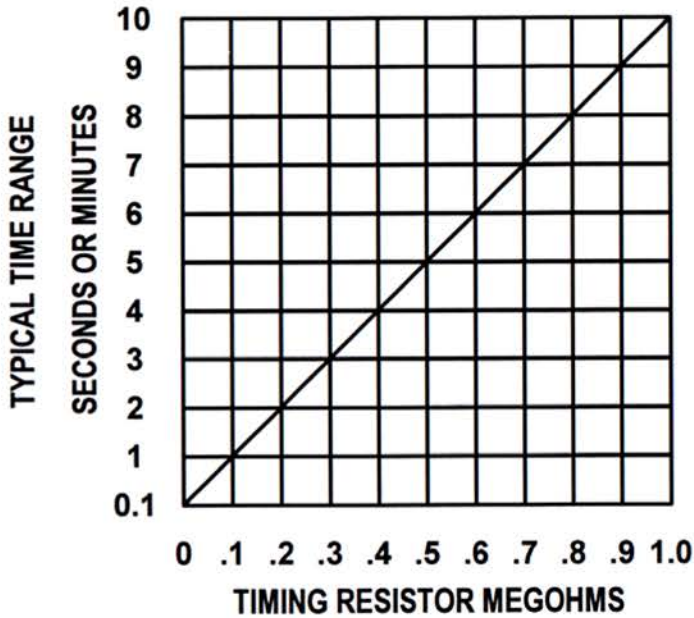
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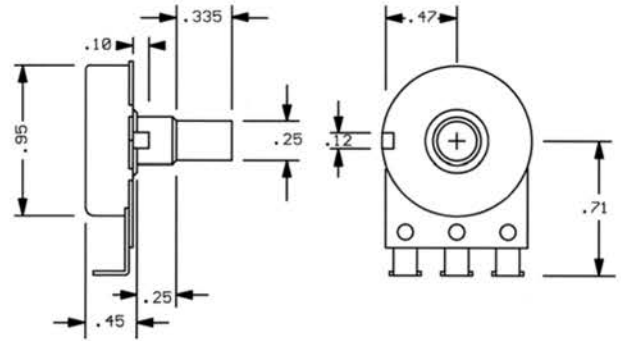
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REV

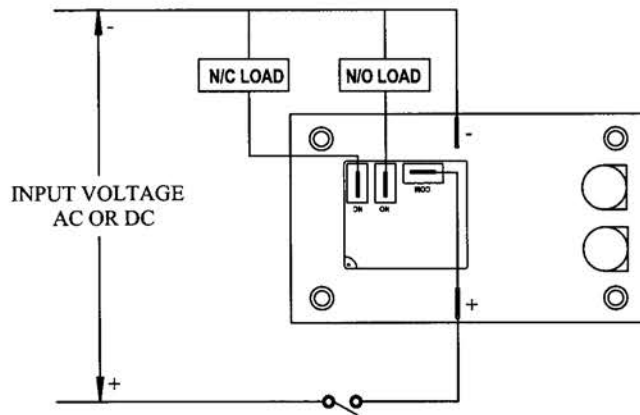
### TYPICAL CALIBRATION RESISTANCE VS TIME



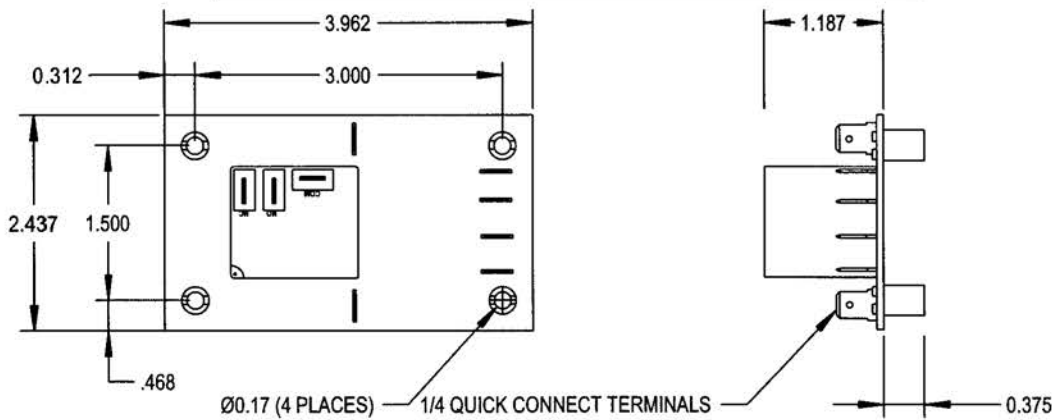
ACCESSORIES AVAILABLE FROM STOCK  
CONTROL POTENTIOMETERS (OPTION A)  
ORDER P/N PM-1M 1 MEGOHM ± 20%



### TYPICAL WIRING



### OUTLINE DRAWING



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