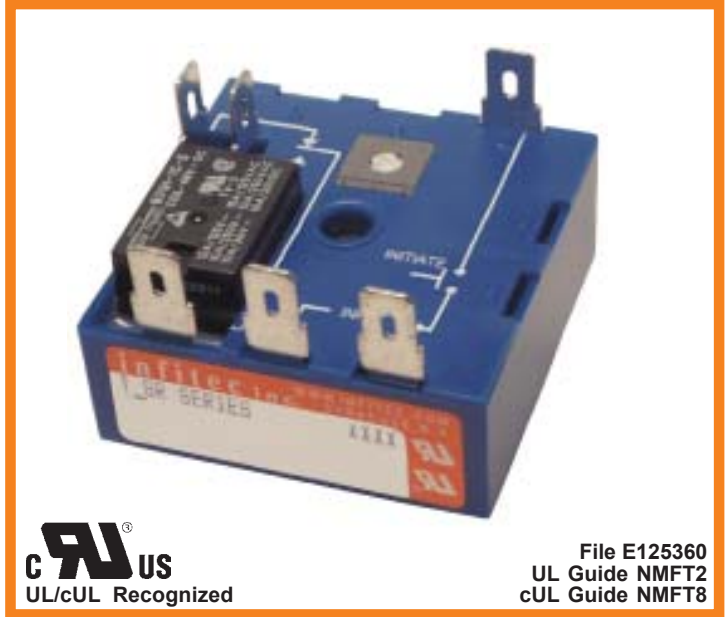




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# TSR SERIES DIGITAL ENCAPSULATED TIME DELAY RELAY MODULES



**UL**  
 UL/cUL Recognized

File E125360  
 UL Guide NMFT2  
 cUL Guide NMFT8

## FEATURES

- C/MOS Microcontroller Circuitry
- Time Delays To 1000 Minutes
- No First Cycle Effect
- Encapsulated To Withstand Harsh Environment
- 0.5% Repeat Accuracy
- Seven Different Modes Of Operation
- SPDT Relay Output Rated 10 Amps, 1/4hp @ 125 VAC
- Fixed Or Local Adjust Time Delays
- Small Size
- UL/cUL Recognized

## SPECIFICATIONS

### 1. Time Delay.

- 1.1 Type: C/MOS microcontroller circuitry
- 1.2 Range: From 0.05 seconds to 1000 minutes. Fixed delays available. (see time delay range chart)
- 1.3 Repeat accuracy:  $\pm 0.5\%$  under fixed conditions
- 1.4 Setting accuracy:  $\pm 10\%$
- 1.5 Reset time: 50 milliseconds maximum
- 1.6 Recycle time: 100 milliseconds during timing, 50 milliseconds after timing
- 1.7 Time delay vs. voltage and temperature:  $\pm 2\%$

### 2. Input.

- 2.1 Operating voltage: 24, 120 & 230 VAC, 12 & 24/28 VDC
- 2.2 Tolerance:  $\pm 20\%$  of nominal
- 2.3 Frequency: 50 - 60 Hertz

### 3. Output.

- 3.1 Type: Electromechanical Relay
- 3.2 Form: SPDT
- 3.3 Rating: 10 amperes, 1/4hp N.O. @ 125/240 VAC  
5 amperes, 1/4hp N.C. @ 125/240 VAC
- 3.4 Life: Electrical - full load - 100,000 operations  
Mechanical - 10,000,000 operations

### 4. Protection.

- 4.1 Transient:  $\pm 1500$  volts for 150 microseconds
- 4.2 Polarity: DC units are reverse polarity protected
- 4.3 Dielectric breakdown: 1500 volts RMS minimum

### 5. Mechanical.

- 5.1 Mounting: One #8 or #10 screw
- 5.2 Termination: 1/4" quick connect terminals
- 5.3 Style: Surface mount /encapsulated

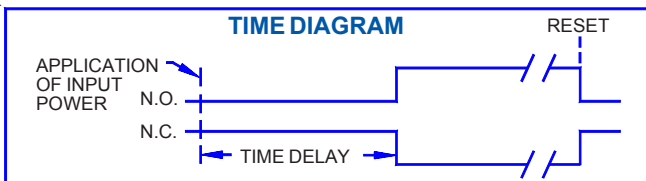
### 6. Environmental.

- 6.1 Operating temperature:  $-20^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$
- 6.2 Storage temperature:  $-30^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- 6.3 Humidity: 95% relative non-condensing

## MODE OF OPERATION - SERIES

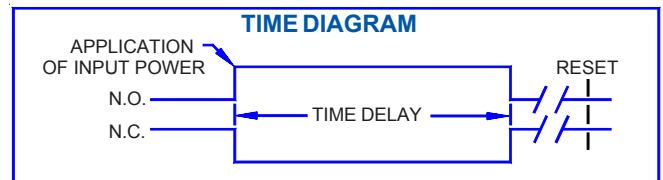
### DELAY ON MAKE - TMSR

Upon application of power to the input terminals, the time delay begins. At the completion of the pre-selected time delay, the output contact transfers. Reset is accomplished by removal of input power. There is no false output when reset during timing.



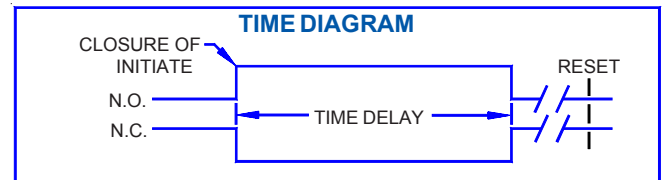
### INTERVAL - TISR

Upon application of power to the input terminals, the output contact immediately transfers and the time delay begins. At the completion of the pre-selected time delay, the output contact reverts to its original position. Reset is accomplished by removal of input power.



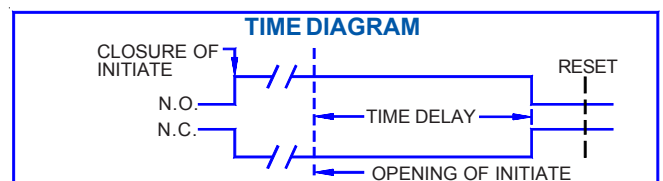
### SINGLE SHOT - TSSR

Power must be applied to the input at all times prior to and during timing. Upon closure of the initiate switch (momentary or maintained) the output contact transfers and the time delay begins. At the completion of the pre-selected delay period, the output contact reverts to its original position. Removal of input power will reset the control.



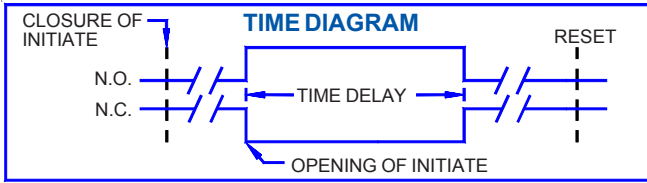
### DELAY ON BREAK - TBSR

Power must be applied to the input at all times prior to and during timing. Upon closure of the initiate switch, the output contact transfers and remains transferred if no further action is taken. When the initiate switch is opened, the time delay begins. At the completion of the pre-selected delay period the output contact reverts to its original position. Closure of initiate during timing will reset the delay period. Removal of input power will reset the control.



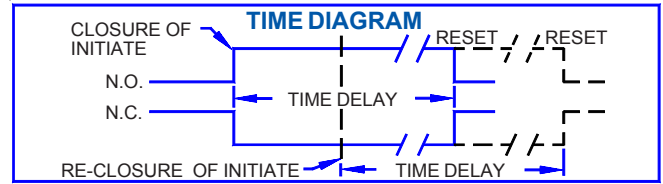
### TRAILING EDGE TRIGGERED - TTSR

Power must be applied to the input at all times prior to and during timing. Upon closure of the initiate switch, nothing happens. When the initiate switch is opened, the time delay begins and the output contact transfers. At the completion of the pre-selected delay period the contact reverts to its original position. Removal of input power will reset the control. If the initiate switch is closed during timing, the output contact reverts to its original position and the time delay is reset.



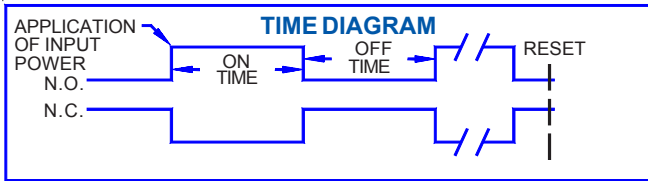
### RETRIGGERABLE ONE-SHOT - TOSR

Power must be applied to the input at all times prior to and during timing. Upon closure of the initiate switch (momentary or maintained) the output contact transfers and the time delay begins. At the completion of the pre-selected delay period, the output contact reverts to its original position. **NOTE:** Momentary or maintained closure of initiate switch during timing will reset the time delay.



### ON/OFF RECYCLE - TRSR

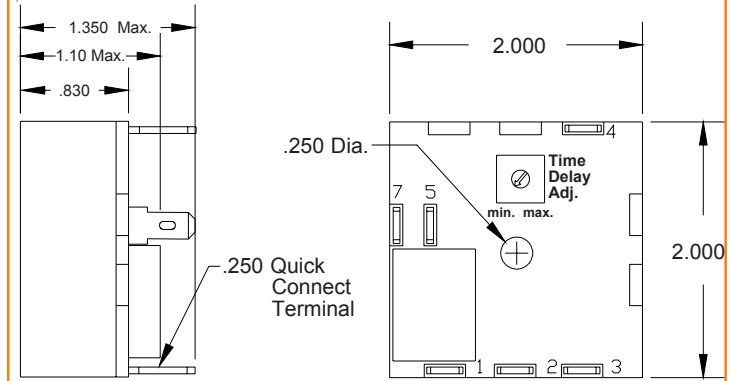
Upon application of power to the input terminals, the **ON** delay begins and the output contact transfers. Upon completion of the **ON** delay, the output contact reverts back to its original position and the **OFF** delay begins. Upon completion of the **OFF** delay, the output contact again transfer and the cycle repeats. Reset is accomplished by removal of input power.



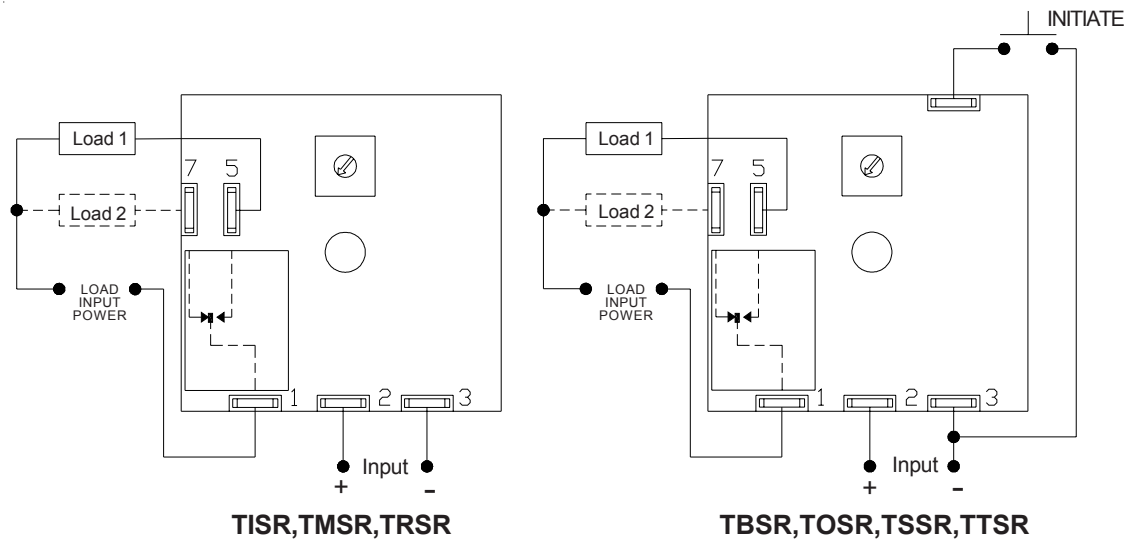
### OFF/ON RECYCLE - TRSR

The inverse of On/Off recycling.

## DIMENSIONS



## CONNECTION DIAGRAM



LOAD 2 = AUXILIARY LOAD (off when Load 1 is on)

## ORDERING INFORMATION

SERIES	INPUT VOLTAGE	ADJUSTMENT	TIME DELAY RANGE	
TBSR TISR TMSR TOSR TRSR TSSR TTSSR	1 - 12 VDC 2 - 24/28 VDC 4 - 24 VAC 5 - 120 VAC 6 - 230 VAC	0 - Local Adj. 1 - Factory Fixed	See Time Delay Range Chart	
			<b>TRSR ONLY</b>	<b>TIME DELAY RANGE</b>
			1 - On Time First 2 - Off Time First	See Time Delay Range Chart <b>NOTE: 1st &amp; 2nd delays are equal</b>