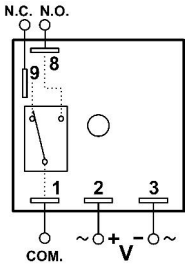
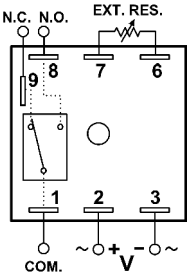
TIME DELAY RELAYS

Product Summary

Macromatic offers a wide variety of time delay relays and accessories. Each one has different features and operating characteristics, allowing you to choose the exact product to meet your needs. Our time delay relays are available in either programmable or non-programmable versions. We offer both single or multiple function time delay relays. Choose between SPDT or DPDT relay outputs & solid state outputs for high duty cycle applications. Time delay relays are available as plug-in units for use with industry standard 8 & 11 pin octal sockets. They also come in 2" x 2" encapsulated & 1/16 DIN mounting configurations. Choose between analog or digital-set time delay relays. Refer to the Selection Table on this page for more information.

Product Series		Mounting Configuration	Time Delay Setting & Ranges	Functions	Input Voltages	Output	See Pages
	**THR Series Relay Output**	2" x 2" Encapsulated Panel Mounted with One Screw	Analog-Set 0.1 SEC - 100 HR	Single-Function	12VDC, 24VAC/DC, 120VAC/DC, 240VAC	10A SPDT Relay	43-49
	**THS Series Solid State Output**		Analog-Set 0.01 SEC - 100 HR	Single-Function	24-240VAC, 12-48VDC	1A SPNO Solid State	50-53
	**THL Series Solid State Inline (Series) Output**		Analog-Set 0.01 SEC - 100 HR	Single-Function	240-240VAC & 12-48VDC	1A SPNO Solid State	54-55
	**TR-5 Series Standard**	Plug-in Utilizing Industry-Standard 8 & 11 Pin Sockets	Analog-Set 0.05 SEC - 2 HR	Single-Function	12VDC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	56-59 60-61
	**TR-6 Series *Time Ranger* Programmable**		Analog-Set Multi-Range 0.1 SEC - 24 HR	Single-Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT Relay	62-65
	**TD-8 Series *Time Ranger* Digital-Set Programmable**		Digital-Set Multi-Range 0.1 SEC - 1,023 HR	Multi-Function (16) & Single-Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	66-68
	**TD-7 Series *Time Ranger* Digital-Set Programmable**		Digital-Set Multi-Range 0.05 SEC - 999 HR	Multi-Function (10) & Single-Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	69-71
	**SS-6 & SS-8 Series Compact**		Analog-Set 0.2 - 300 SEC	Single-Function	12VDC, 24VAC/DC, 120VAC	5A SPDT Relay	76
	**TAD Series Digital-Set 1/16 DIN**	1/16 DIN (48mm^2)	Digital-Set Multi-Range 0.01 SEC - 9,990 HR	Multi-Function (10)	24-240VAC & 24-240VDC	5A DPDT Relay	72-73
	**TAA Series Analog-Set 1/16 DIN**		Digital-Set Multi-Range 0.05 SEC - 100 HR	Multi-Function (6)--2 Versions	24-240VAC & 24-240VDC	3A DPDT & SPDT Relay	74-75

Isolated Relay Common

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
ON DELAY **A**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10262-** THR-10266-** THR-10268-** THR-10261-**	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 300**
INTERVAL ON **B**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10562-** THR-10566-** THR-10568-** THR-10561-**	
FLASHER (OFF Time 1st) **E**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10862-** THR-10866-** THR-10868-** THR-10861-**	
FLASHER (ON Time 1st) **F**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10962-** THR-10966-** THR-10968-** THR-10961-**	**Remote Time Delay**  **DIAGRAM 302**
REPEAT CYCLE * (OFF Time 1st) **L**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-13162-** THR-13166-** THR-13168-** THR-13161-**	
REPEAT CYCLE * (ON Time 1st) **M**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-15162-** THR-15166-** THR-15168-** THR-15161-**	
DELAYED INTERVAL * **N**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16162-** THR-16166-** THR-16168-** THR-16161-**	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-10262-30 is an On Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-10262-F5S is an On Delay with a time delay fixed at 5 seconds.
- **Remote Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	**Code**
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

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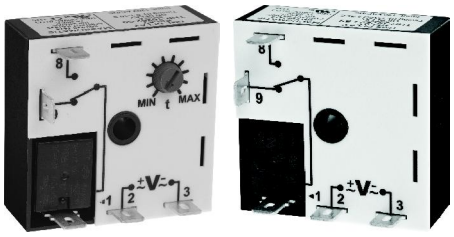

- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

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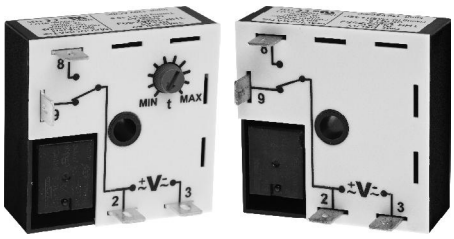
TIME DELAY RELAYS

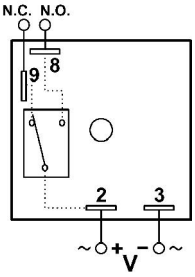
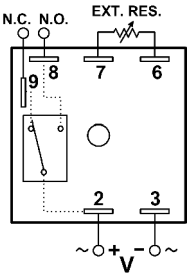
THR Series Encapsulated--Relay Output

On Delay, Interval, Flasher, Cycle & Delayed Interval



- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Relay Common internally connected to Pin 2-makes wiring easier
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

Relay Common Internally Connected to Pin 2

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
ON DELAY **A**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10262-**J THR-10266-**J THR-10268-**J THR-10261-**J	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 301** **Remote Time Delay**  **DIAGRAM 303**
INTERVAL ON **B**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10562-**J THR-10566-**J THR-10568-**J THR-10561-**J	
FLASHER (OFF Time 1st) **E**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10862-**J THR-10866-**J THR-10868-**J THR-10861-**J	
FLASHER (ON Time 1st) **F**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-10962-**J THR-10966-**J THR-10968-**J THR-10961-**J	
REPEAT CYCLE * (OFF Time 1st) **L**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-13162-**J THR-13166-**J THR-13168-**J THR-13161-**J	
REPEAT CYCLE * (ON Time 1st) **M**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-15162-**J THR-15166-**J THR-15168-**J THR-15161-**J	
DELAYED INTERVAL * **N**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16162-**J THR-16166-**J THR-16168-**J THR-16161-**J	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-10262-30J is an On Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-10262-F5SJ is an On Delay with a time delay fixed at 5 seconds.
- **Remote Adjustable Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	Code
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

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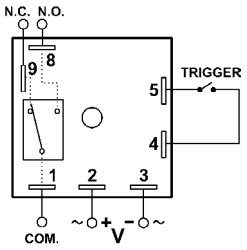
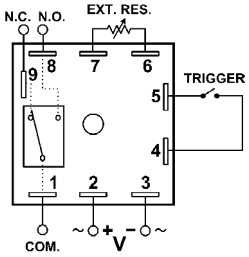
TIME DELAY RELAYS

THR Series Encapsulated--Relay Output

Off Delay, Single Shot, Watchdog, Single Shot Falling Edge, On Delay/Off Delay & Delayed Interval

Isolated Control Switch & Isolated Relay Common

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
OFF DELAY **C**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11662-** THR-11666-** THR-11668-** THR-11661-**	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 304** **Remote Time Delay**  **DIAGRAM 306**
SINGLE SHOT **D**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11562-** THR-11566-** THR-11568-** THR-11561-**	
WATCHDOG (Retriggerable Single Shot) **J**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11362-** THR-11366-** THR-11368-** THR-11361-**	
SINGLE SHOT FALLING EDGE (Retriggerable) **H**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-12262-** THR-12266-** THR-12268-** THR-12261-**	
ON/OFF DELAY * **G**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-14162-** THR-14166-** THR-14168-** THR-14161-**	
DELAYED INTERVAL * (Triggered) **P**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16562-** THR-16566-** THR-16568-** THR-16561-**	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-11662-30 is an Off Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-11662-F5S is an Off Delay with a time delay fixed at 5 seconds.
- **Remote Adjustable Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	**Code**
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

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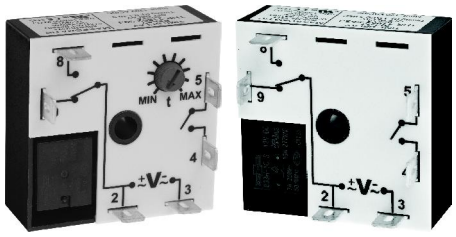
TIME DELAY RELAYS

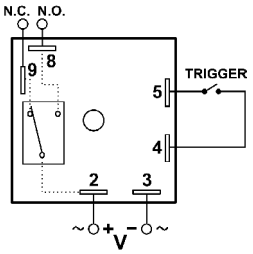
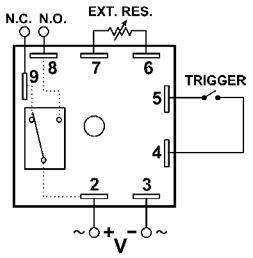
THR Series Encapsulated--Relay Output

Off Delay, Single Shot, Watchdog, Single Shot Falling Edge, On Delay/Off Delay & Delayed Interval



- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Relay Common internally connected to Pin 2-makes wiring easier
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

Isolated Control Switch & Relay Common Internally Connected to Pin 2

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
OFF DELAY **C**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11662-**J THR-11666-**J THR-11668-**J THR-11661-**J	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 305**
SINGLE SHOT **D**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11562-**J THR-11566-**J THR-11568-**J THR-11561-**J	
WATCHDOG (Retriggerable Single Shot) **J**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11362-**J THR-11366-**J THR-11368-**J THR-11361-**J	
SINGLE SHOT FALLING EDGE (Retriggerable) **H**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-12262-**J THR-12266-**J THR-12268-**J THR-12261-**J	**Remote Time Delay**  **DIAGRAM 307**
ON/OFF DELAY * **G**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-14162-**J THR-14166-**J THR-14168-**J THR-14161-**J	
DELAYED INTERVAL * (Triggered) **P**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16562-**J THR-16566-**J THR-16568-**J THR-16561-**J	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-11662-30J is an Off Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-11662-F5SJ is an Off Delay with a time delay fixed at 5 seconds.
- **Remote Adjustable Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	Code
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

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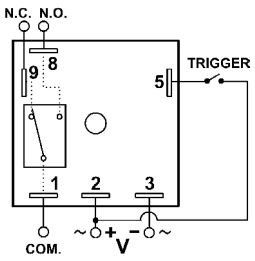
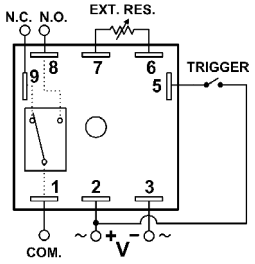
TIME DELAY RELAYS

THR Series Encapsulated--Relay Output

Off Delay, Single Shot, Watchdog, Single Shot Falling Edge, On Delay/Off Delay & Delayed Interval

Control Switch Common to Pin 2 & Isolated Relay Common

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
OFF DELAY **C**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11662-**T THR-11666-**T THR-11668-**T THR-11661-**T	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 308** **Remote Time Delay**  **DIAGRAM 310**
SINGLE SHOT **D**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11562-**T THR-11566-**T THR-11568-**T THR-11561-**T	
WATCHDOG (Retriggerable Single Shot) **J**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11362-**T THR-11366-**T THR-11368-**T THR-11361-**T	
SINGLE SHOT FALLING EDGE (Retriggerable) **H**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-12262-**T THR-12266-**T THR-12268-**T THR-12261-**T	
ON/OFF DELAY * **G**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-14162-**T THR-14166-**T THR-14168-**T THR-14161-**T	
DELAYED INTERVAL * (Triggered) **P**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16562-**T THR-16566-**T THR-16568-**T THR-16561-**T	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-11662-30T is an Off Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-11662-F5ST is an Off Delay with a time delay fixed at 5 seconds.
- **Remote Adjustable Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	**Code**
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

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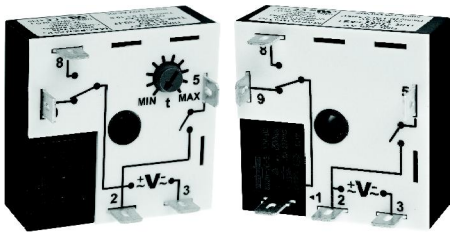

- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

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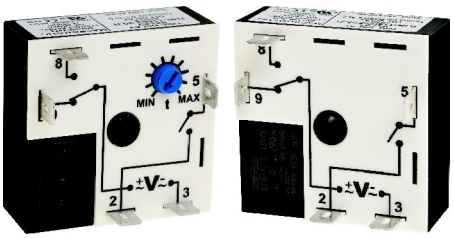
TIME DELAY RELAYS

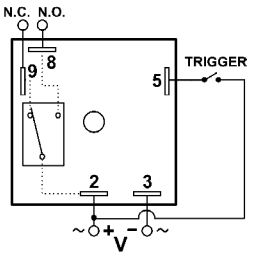
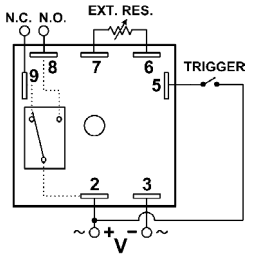
THR Series Encapsulated--Relay Output

Off Delay, Single Shot, Watchdog, Single Shot Falling Edge, On Delay/Off Delay & Delayed Interval



- Cost effective design & compact 2" x 2" enclosure are ideal for volume OEM applications
- Microprocessor-based design for greater performance & maximum flexibility
- Encapsulated for protection against harsh environments
- 10A SPDT relay output contacts can handle most pilot duty & fractional HP loads
- Relay Common internally connected to Pin 2-makes wiring easier
- Onboard & remote adjustable or fixed time delays from 0.05 seconds to 100 hours
- c UL us CE

Control Switch Common to Pin 2 &
Relay Common Internally Connected to Pin 2

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
OFF DELAY **C**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11662-**JT THR-11666-**JT THR-11668-**JT THR-11661-**JT	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 309**
SINGLE SHOT **D**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11562-**JT THR-11566-**JT THR-11568-**JT THR-11561-**JT	
WATCHDOG (Retriggerable Single Shot) **J**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-11362-**JT THR-11366-**JT THR-11368-**JT THR-11361-**JT	
SINGLE SHOT FALLING EDGE (Retriggerable) **H**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-12262-**JT THR-12266-**JT THR-12268-**JT THR-12261-**JT	**Remote Time Delay**  **DIAGRAM 311**
ON/OFF DELAY * **G**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-14162-**JT THR-14166-**JT THR-14168-**JT THR-14161-**JT	
DELAYED INTERVAL * (Triggered) **P**	120V AC/DC 12V DC 24V AC/DC 240V AC	THR-16562-**JT THR-16566-**JT THR-16568-**JT THR-16561-**JT	

■ See Pages 77-79 for definitions & explanations of Timing Functions.

* ON & OFF Time Ranges for these functions are the same. See ***www.macromatic.com/onoff*** for information on how to order a unit with different ON & OFF time ranges.

** Complete Product Number using two-digit Code from Table below.

Time Delays

THR Series Products have three time delay options:

- **Onboard Adjustable Time Delay**--complete Product Number by adding two-digit Code from Table at right, i.e., THR-11662-30JT is an Off Delay with a time delay range of 0.1-10 seconds. * See ***www.macromatic.com/onoff*** for information on how to order these functions with different ON & OFF time ranges.
- **Onboard Fixed Time Delay**--replace two-digit Code with suffix "F" followed by delay [0.1 ... 100] followed by (S) seconds, (M) minutes or (H) hours, i.e., THR-11662-F5SJT is an Off Delay with a time delay fixed at 5 seconds.
- **Remote Adjustable Time Delay**--THR Series products can be built with two terminals for remote adjustable or fixed time delays. See Page 49 for information.

** TIMING RANGE TABLE	
Time Delay Range	**Code**
0.05 - 5 Sec.	04
0.1 - 10 Sec.	30
1 - 100 Sec.	31
10 - 1,000 Sec.	36
0.1 - 10 Min.	32
1 - 100 Min.	33
10 - 1,000 Min.	37
1 - 100 Hr.	35

Application Data & Dimensions–Page 49

MACROMATIC
800-238-7474
www.macromatic.com
sales@macromatic.com

APPLICATION DATA

Voltage Tolerance:
AC Operation: +10/-15% of nominal at 50/60 Hz.
DC Operation: +10/-15% of nominal.

Load (Burden): Maximum of 2 VA for all voltages

Setting Accuracy:
Maximum Setting (Adjustable): +5%, -0%
Minimum Setting (Adjustable): +0%, -50%
Fixed Time Delay: ±2% or 50ms, whichever is greater

Repeat Accuracy (constant voltage and temperature)**:**
±0.1% or ± 0.04 seconds, whichever is greater

Reset Time:
Triggered with Input Voltage: 100ms
Triggered with Control Switch: 40ms

Start-up Time (Time from when power is applied until unit is timing): 0.05 Seconds

Maintain Function Time (Time unit continues to operate after power is removed): 0.01 Seconds

Units Triggered by a Control Switch:
Minimum required trigger switch closure time is 50ms.

Temperature: -28° to 65°C (-18° to 149°F)

Output Contacts:
10A @ 240VAC / 7A @ 28VDC SPDT, ¼hp @ 120VAC (N.O.)

Life:
Mechanical: 10,000,000 operations
Full Load: 100,000 operations

Compatibility:
Using a solid state switch to initiate the time sequence is acceptable. See ***www.macromatic.com/leakage*** or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

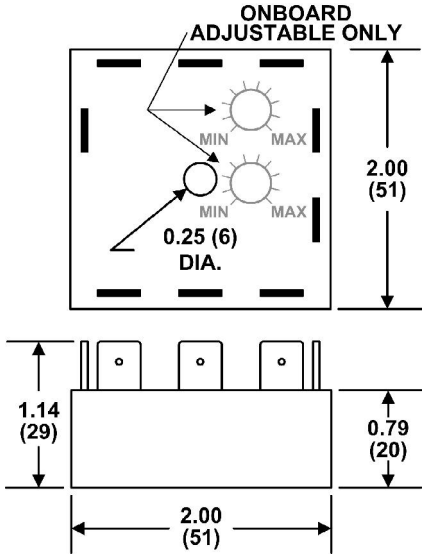
Mounting:
Surface with one #8 or #10 screw

Termination:
0.25" male quick-connect terminals

Approvals:
c UL us
File #E109466

CE

DIMENSIONS



All Dimensions in
Inches (Millimeters)

REMOTE TIME DELAY

Most THR Series products can be built with two terminals for remote adjustable or fixed time delays. To order a product with a remote time delay, complete the Product Number by adding the two-digit Code from the Table shown on the appropriate product selection page followed by the suffix "R1", i.e., THR-10262-30R1. Contact Macromatic for information on limitations of remote time delays on functions with ON & OFF timing ranges.

Adjustable Time Delay
A 100K ohm potentiometer is required to obtain the maximum time delay for all standard ranges. To use other values of remote potentiometers, contact Macromatic.

Fixed Time Delay
A fixed time delay can be set by connecting a resistor across the two terminals. To determine the resistor value required, use the following equation:

$$R = \frac{T}{T_{max}} \times 100{,}000$$

R = Resistance value required to obtain T
T = Desired time delay
T_{max} = Maximum time delay of range

Example: Using time range 0.1-10 seconds, what resistor value is required for a fixed time delay of 5 seconds:

$$R = \frac{5}{10} \times 100{,}000 = 50{,}000 \text{ ohms (50K ohms)}$$

TIME DELAY RELAYS
DEFINITION OF TIMING FUNCTIONS

Understanding the differences between all the functions available in time delay relays can sometimes be a daunting task. To begin with, time delay relays are simply control relays with a time delay built in. Their purpose is to control an event based on time.

Typically, time delay relays are initiated or triggered by one of two methods, depending on the function:

- application of input voltage
- application of a trigger

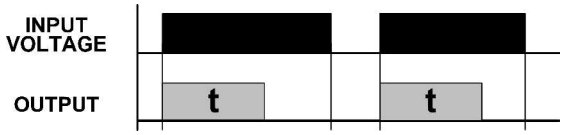
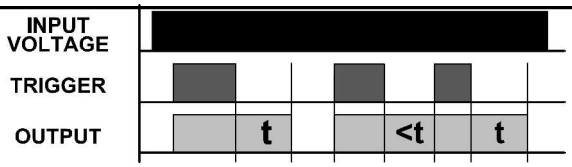
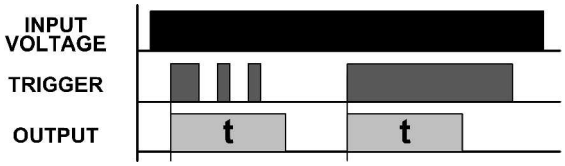
These triggers can be one of two signals: a control switch (dry contact), i.e., limit switch, push button, float switch, etc., or voltage (commonly known as a power trigger).

CAUTION: any time delay relay that is designed to be initiated with a dry contact control switch trigger could be damaged if voltage is applied to the trigger switch terminals. Only products that have a "power trigger" should be used with voltage as the trigger.

To help understand, some definitions are important:

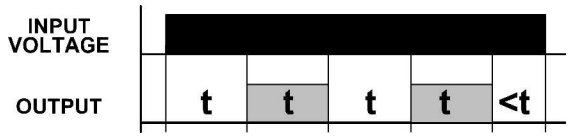
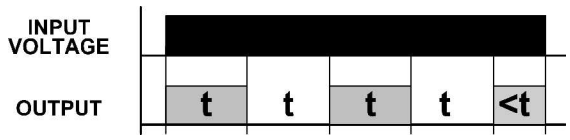
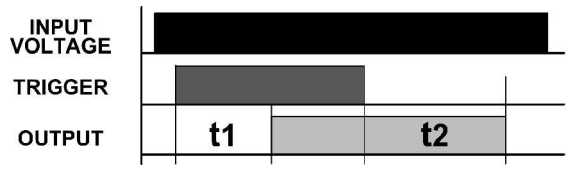
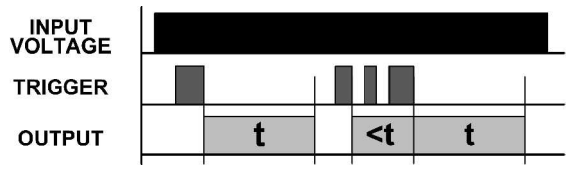
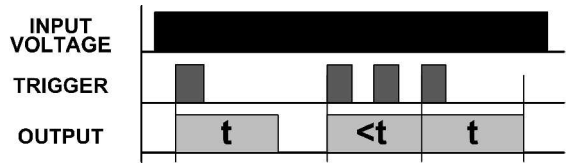
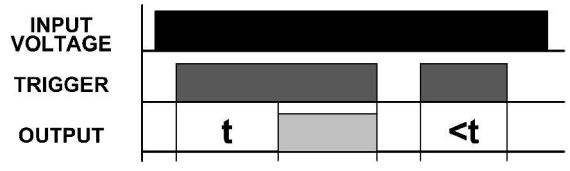
- Input Voltage - control voltage applied to the input terminals. Depending on the function, input voltage will either initiate the unit or make it ready to initiate when a trigger is applied.
- Trigger- on certain timing functions, a trigger is used to initiate the unit after input voltage has been applied. As noted above, this trigger can either be a control switch (dry contact switch) or a power trigger (voltage).
- Output (Load) - every time delay relay has an output (either mechanical relay or solid state) that will open & close to control the load. Note that the user must provide the voltage to power the load being switched by the output contacts of the time delay relay. In all wiring diagrams, the output is shown in the normal de-energized position.

Below and on the following pages are both written and visual descriptions on how the common timing functions operate. A Timing Chart shows the relationship between Input Voltage, Trigger (if present) and Output. If you cannot find a product to fit your requirements or have any questions, Macromatic's Application Engineers offer technical information along with product selection and application assistance. Just call us at 800-238-7474 or e-mail us at tech-help@macromatic.com.

Function/Code	Operation	Timing Chart
ON DELAY Delay on Operate Delay on Make **A**	Upon application of input voltage, the time delay (t) begins. At the end of the time delay (t), the output is energized. Input voltage must be removed to reset the time delay relay & de-energize the output..	
INTERVAL ON Interval **B**	Upon application of input voltage, the output is energized and the time delay (t) begins. At the end of the time delay (t), the output is de-energized. Input voltage must be removed to reset the time delay relay.	
OFF DELAY Delay on Release Delay on Break Delay on De-Energization **C**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the output is energized. Upon removal of the trigger, the time delay (t) begins. At the end of the time delay (t), the output is de-energized. Any application of the trigger during the time delay will reset the time delay (t) and the output remains energized.	
SINGLE SHOT One Shot Momentary Interval **D**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the output is energized and the time delay (t) begins. During the time delay (t), the trigger is ignored. At the end of the time delay (t), the output is de-energized and the time delay relay is ready to accept another trigger.	

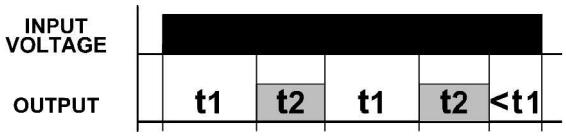
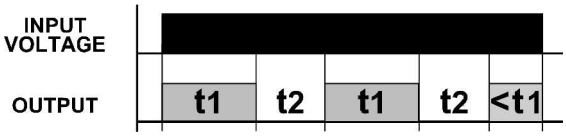
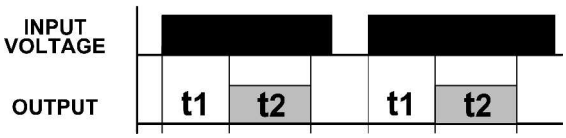
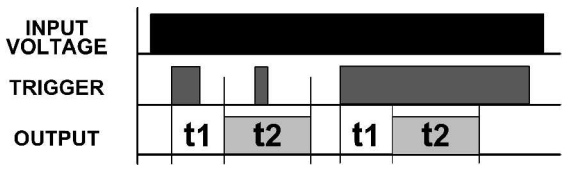
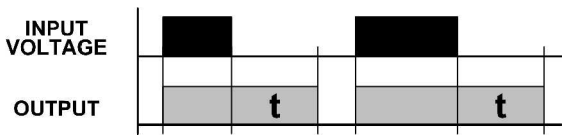
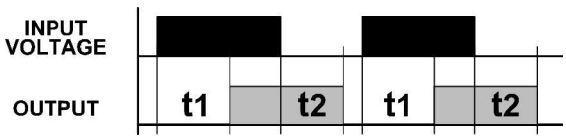
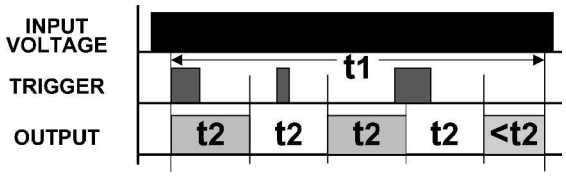
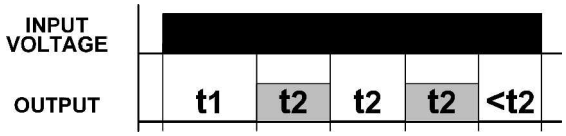
TIME DELAY RELAYS

Definition of Timing Functions

Function/Code	Operation	Timing Chart
FLASHER (Off First) **E**	Upon application of input voltage, the time delay (t) begins. At the end of the time delay (t), the output is energized and remains in that condition for the time delay (t). At the end of the time delay (t), the output is de-energized and the sequence repeats until input voltage is removed.	
FLASHER (ON First) **F**	Upon application of input voltage, the output is energized and the time delay (t) begins. At the end of the time delay (t), the output is de-energized and remains in that condition for the time delay (t). At the end of the time delay (t), the output is energized and the sequence repeats until input voltage is removed.	
ON/OFF DELAY **G**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the time delay (t1) begins. At the end of the time delay (t1), the output is energized. When the trigger is removed, the output contacts remain energized for the time delay (t2). At the end of the time delay (t2), the output is de-energized & the time delay relay is ready to accept another trigger. If the trigger is removed during time delay period (t1), the output will remain de-energized and time delay (t1) will reset. If the trigger is removed during time delay period (t2), the output will remain energized and the time delay (t2) will reset.	
SINGLE SHOT FALLING EDGE **H**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the output remains de-energized. Upon removal of the trigger, the output is energized and the time delay (t) begins. At the end of the time delay (t), the output is de-energized unless the trigger is removed and re-applied prior to time out (before time delay (t) elapses). Continuous cycling of the trigger at a rate faster than the time delay (t) will cause the output to remain energized indefinitely.	
WATCHDOG Retriggerable Single Shot **J**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the output is energized and the time delay (t) begins. At the end of the time delay (t), the output is de-energized unless the trigger is removed and re-applied prior to time out (before time delay (t) elapses). Continuous cycling of the trigger at a rate faster than the time delay (t) will cause the output to remain energized indefinitely.	
TRIGGERED ON DELAY **K**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the time delay (t) begins. At the end of the time delay (t), the output is energized and remains in that condition as long as either the trigger is applied or the input voltage remains. If the trigger is removed during the time delay (t), the output remains de-energized & the time delay (t) is reset.	

TIME DELAY RELAYS

DEFINITION OF TIMING FUNCTIONS

Function/Code	Operation	Timing Chart
REPEAT CYCLE (OFF 1st) **L**	Upon application of input voltage, the time delay (t1) begins. At the end of the time delay (t1), the output is energized and remains in that condition for the time delay (t2). At the end of this time delay, the output is de-energized and the sequence repeats until input voltage is removed.	
REPEAT CYCLE (ON 1st) **M**	Upon application of input voltage, the output is energized and the time delay (t1) begins. At the end of the time delay (t1), the output is de-energized and remains in that condition for the time delay (t2). At the end of this time delay, the output is energized and the sequence repeats until input voltage is removed.	
DELAYED INTERVAL Single Cycle **N**	Upon application of input voltage, the time delay (t1) begins. At the end of the time delay (t1), the output is energized and remains in that condition for the time delay (t2). At the end of this time delay (t2), the output is de-energized. Input voltage must be removed to reset the time delay relay.	
TRIGGERED DELAYED INTERVAL **P**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the time delay (t1) begins. At the end of the time delay (t1), the output is energized and remains in that condition for the time delay (t2). At the end of the time delay (t2), the output is de-energized & the relay is ready to accept another trigger. During both time delay (t1) & time delay (t2), the trigger is ignored.	
TRUE OFF DELAY **R**	Upon application of input voltage, the output is energized. When the input voltage is removed, the time delay (t) begins. At the end of the time delay (t), the output is de-energized. Input voltage must be applied for a minimum of 0.5 seconds to assure proper operation. Any application of the input voltage during the time delay (t) will reset the time delay. No external trigger is required.	
ON DELAY/ TRUE OFF DELAY **S**	Upon application of input voltage, the time delay (t1) begins. At the end of the time delay (t1), the output is energized. When the input voltage is removed, the output remains energized for the time delay (t2). At the end of the time delay (t2), the output is de-energized. Input voltage must be applied for a minimum of 0.5 seconds to assure proper operation. Any application of the input voltage during the time delay (t2) will keep the output energized & reset the time delay (t2). No external trigger is required.	
SINGLE SHOT-FLASHER **T**	Upon application of input voltage, the time delay relay is ready to accept a trigger. When the trigger is applied, the time delay (t1) begins and the output is energized for the time delay (t2). At the end of this time delay (t2), the output is de-energized and remains in that condition for the time delay (t2). At the end of the time delay (t2), the output is energized and the sequence repeats until time delay (t1) is completed. During the time delay (t1), the trigger is ignored.	
ON DELAY-FLASHER **X**	Upon application of input voltage, the time delay begins (t1). At the end of the time delay (t1), the output is energized and remains in that condition for the time delay (t2). At the end of this time delay (t2), the output is de-energized and remains in that condition for the time delay (t2). At the end of the time delay (t2), the output is energized and the sequence repeats until input voltage is	

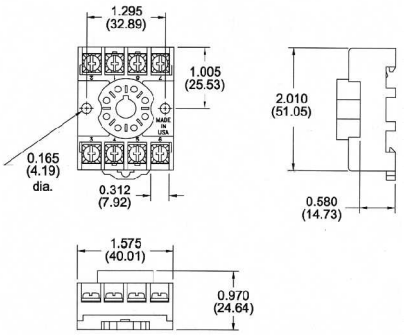
SOCKETS & ACCESSORIES

8 Pin Octal Socket--
Surface or DIN Rail-Mounted

10A @ 600V *
1 or 2 #12-22 AWG Wire
Recommended Tightening Torque
of 6-7 in-lbs. (12 in-lbs maximum)
Pressure Wire Clamp Terminations

File #E169693 File #LR701114

Product Number 70169-D

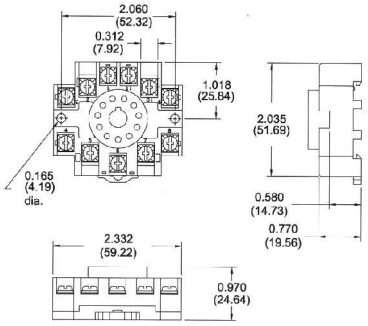


11 Pin Octal Socket--
Surface or DIN Rail-Mounted

10A @ 300V
1 or 2 #12-22 AWG Wire
Recommended Tightening Torque
of 6-7 in-lbs. (12 in-lbs maximum)
Pressure Wire Clamp Terminations

File #E169693 File #LR701114

Product Number 70170-D

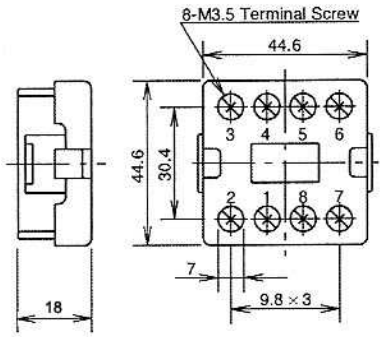


8 Pin Octal Socket--
Back-Mounted

10A @ 300V
Pressure Wire Clamp Terminations

File #E62437

Product Number SR6P-M08G

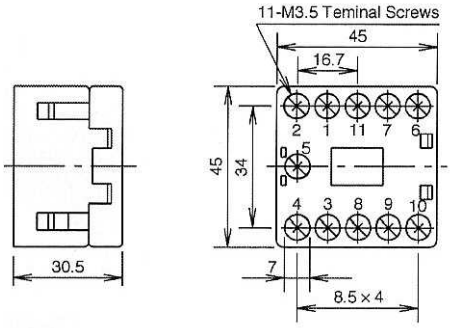


11 Pin Octal Socket--
Back-Mounted

10A @ 300V
Pressure Wire Clamp Terminations

File #E62437

Product Number SR6P-M11G



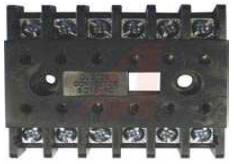
12 Pin Socket--
Surface-Mounted

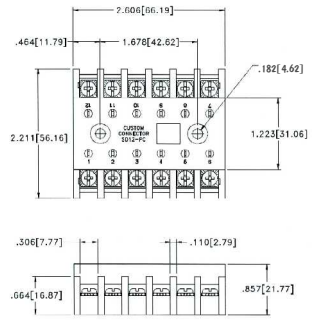
10A @ 600V
#12-20 AWG Wire
Pressure Wire Clamp Terminations

File #E60008 File #LR29513

NOTE: if a 12 Pin Socket is required for DIN-rail mounting, please contact Macromatic.

Product Number SD12-PC





* Plug-in Three-Phase Monitor Relays require a 600V-rated socket when used on system voltages greater than 300V.

SOCKETS & ACCESSORIES

Hold Down Spring
Product Number 70166

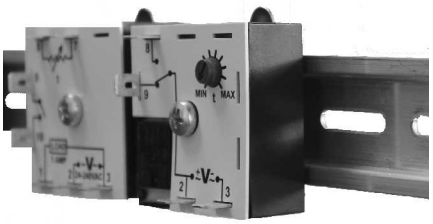
Can be used for:

- Panel-Mounted Sockets
- Sockets Mounted to 35mm DIN Track *

* Requires two machine screws with washers & nuts--contact Macromatic or www.macromatic.com/70166 for more information.

DIN Rail Adaptor Kit
Product Number 70500

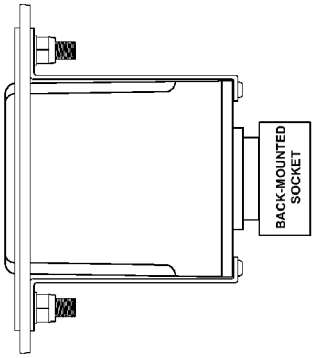
Quick & Economical Way to Install Any THx Series 2" x 2" Encapsulated Time Delay Relays on 35mm DIN Track



- Clip Comes with a Threaded Hole to Eliminate Need for a Washer & Nut
- All Mounting Hardware Included

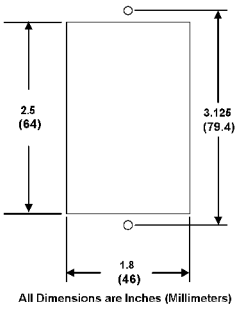
Panel Mount Assembly
For Panel Mounting Standard Plug-in Products
Product Number 70400

This assembly provides a simple & economical method to mount plug-in products to the deadfront of an enclosure/panel:



(Relay Not Included with Assembly--Shown for Reference Only)

Panel Cutout



All Dimensions are Inches (Millimeters)

- Sturdy Aluminum Construction
- Stainless Steel Studs
- All Mounting Hardware Included
- White Textured Painted Finish
- 2 3/16" W x 3 7/16" H

INDEX BY PRODUCT NUMBER

* The "-xx" suffix denotes the time range for time delay relays with adjustable time delay. Contact Macromatic for any product not listed.

*** The "-yyy" suffix denotes the input voltage, trip delay & sensing delay for CxH Series encapsulated current sensing relays.

Index By Product Number (Continued)

* The "-xx" suffix denotes the time range for time delay relays with adjustable time delay. Contact Macromatic for any product not listed.