

THL-8 SERIES

SOLID STATE OUTPUT | DIP-SWITCH DIGITAL-SET

APPLICATION DATA

Voltage Tolerance:

AC Operation: +10 to -15% of nominal voltage, 50/60 Hz $\pm 5\%$
 DC Operation: +10 to -15% of nominal voltage

Load (Burden): Maximum of 1 VA for all voltages

Setting Accuracy:

Constant Voltage & Temperature w/i specifications:

$\pm 2\%$ of set time or $\pm 50\text{ms}$, whichever is greater

For Variable Voltage & Temperature w/i specifications:

$\pm 5\%$ of set time or $\pm 50\text{ms}$, whichever is greater

Repeat Accuracy:

Constant Voltage & Temperature w/i specifications:

$\pm 0.1\%$ of set time or ± 0.02 seconds, whichever is greater

For Variable Voltage & Temperature w/i specifications:

$\pm 1\%$ of set time or ± 0.02 seconds, whichever is greater

Reset Time: 50ms

Start-up Time:

(Time from when power is applied until unit is timing)
 0.02 Seconds

Maintain Function Time:

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

Temperature: Operating: -40° to 65°C (-40° to 149°F)

Storage: -40° to 85°C (-40° to 185°F)

Output Contacts:

Normally Open Solid State 1A Continuous, 10A Inrush @ 65°C , Pilot Duty

Life:

No predictable failure if used within operating parameters.

Leakage Current (OFF-State): $< 5\text{ma}$ @ 240V AC

Minimum Load Current: 20ma

Effective Voltage Drop (ON-State): Maximum 3V @ 1A for all voltages

Compatibility:

Using a solid state switch to initiate the time sequence is acceptable. See _____ or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

Mounting:

Surface with one #8 or #10 screw and a maximum tightening torque of 15 in-lbs.

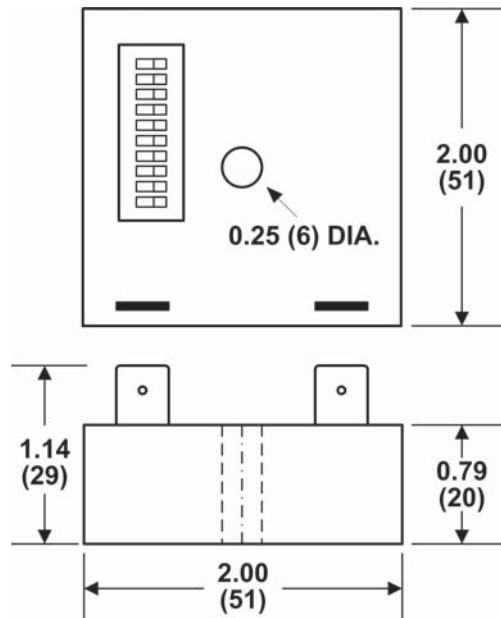
Termination:

0.25" male quick-connect terminals

Approvals:



DIMENSIONS



All Dimensions in Inches (Millimeters)

ON DELAY | INLINE (SERIES CONNECTION)

SOLID STATE OUTPUT | DIP-SWITCH DIGITAL-SET | THL-8 SERIES



- ◆ Universal input voltage: 24-240V AC & 12-48V DC
- ◆ DIP-switch for accurate digital-set of any time delay from 100ms to 10,230 seconds
- ◆ Two-terminal series-connection with the load
- ◆ 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
- ◆ Output rated 1A continuous/10A inrush pilot duty is perfect for high duty cycle/long life applications



Better. By Design.

The THL-8 On Delay Inline (Series Connection) offers an easy and accurate method to select any time delay. The THL-8 Series is a compact 2" x 2" encapsulated enclosure with a universal input voltage. It is connected in series with the load requiring only 2 terminals/connections.

Three time ranges are available: 0.1 – 102.3 seconds, 1 – 1,023 seconds and 10 – 10,230 seconds. Programming is accomplished through the use of a 10-position DIP-switch. Each position is marked with a binary time increment. The required delay is selected by moving the switch of each increment to the ON position and adding their corresponding values (see examples below). This method provides a greater setting accuracy than is found on other units with an analog potentiometer.

These products feature a universal input voltage of 24-240V AC and 12-48V DC. The inline two-terminal output is rated 1A continuous/10A inrush pilot duty, and is ideal for high duty cycle and long life applications. The enclosure is encapsulated for protection against harsh environments.

For similar products with choices of onboard and remote analog-set or fixed time delay, see the THL-1 Series.

FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER **	WIRING
ON DELAY A	24-240V AC & 12-48V DC	THL-8024U-**	<p>DIAGRAM 329</p>

■ See "Definitions of Timing Functions".

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

TIME DELAYS

**TIMING RANGE TABLE	
COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE BELOW: i.e., THL-8024U-40	
Time Delay Range	Code
0.1 - 102.3 Sec.	40
1 - 1,023 Sec.	41
10 - 10,230 Sec.	42

BINARY SWITCH OPERATION

-40 RANGE 0.1 - 102.3 SEC	-41 RANGE 1 - 1,023 SEC	-42 RANGE 10 - 10,230 SEC
OFF → ON	OFF → ON	OFF → ON
0.1	1	10
0.2	2	20
0.4	4	40
0.8	8	80
1.6	16	160
3.2	32	320
6.4	64	640
12.8	128	1280
25.6	256	2560
51.2	512	5120
2.5 SECONDS	300 SECONDS (5 MINUTES)	1800 SECONDS (30 MINUTES)

COMBINE FOR TOTAL TIME IN SECONDS

Build your Time Delay Relays with the [Online Product Builder](#)



INSTALLATION INSTRUCTIONS

THL-8 SERIES ENCAPSULATED TIME DELAY RELAYS

March, 2016 Rev A

901-0000-320

DANGER!



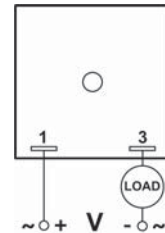
Potentially hazardous voltages are present. Electrical shock can cause death or serious injury. Installation should be done by qualified personnel following all National, State & Local Codes.



**BE SURE TO REMOVE ALL POWER SUPPLYING THIS EQUIPMENT BEFORE CONNECTING OR DISCONNECTING WIRING.
READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.**

WIRING

Wire the unit per the connection diagram on the top of the time delay relay or as shown at right. Using a solid state switch to initiate the time sequence is acceptable. See Macromatic for information regarding leakage current limits and other solid state design considerations.



SETTING THE TIME DELAY

See back (page 2).

Function	Series	Operation	Timing Chart
ON DELAY Delay on Operate	THL-8	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.	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">INPUT VOLTAGE</div> </div>

SETTING THE TIME DELAY

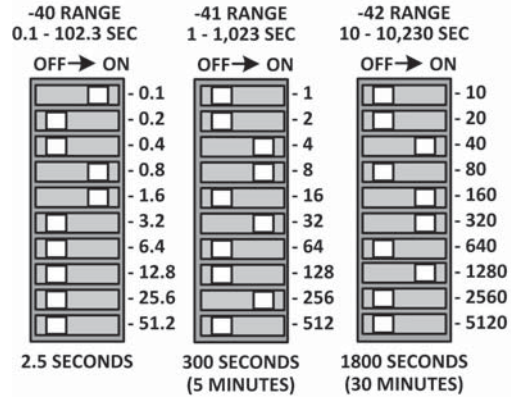
All THL-8 Series products come with a specific single time delay range as indicated on the nameplate and by the suffix to the Product Number. Setting the time delay is accomplished through the use of a 10-position DIP-switch. Each position on the DIP-switch is marked with a time increment. The required delay (t) is selected by moving the switch of each increment to the ON position and adding their corresponding values. See examples shown at right.

**TIMING RANGE TABLE	
COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE BELOW: i.e., THL-8024U-40	
Time Delay Range	Code
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TROUBLESHOOTING

If the unit fails to operate properly, check that all connections are correct per the connection diagram on the product. One or more of the DIP switches must be set to the ON position to achieve a time delay with this unit. Ensure solid state switching devices controlling this unit do not create off-state leakage current. Do not connect voltage directly across terminals 1 and 3, a load is required.

BINARY SWITCH OPERATION



COMBINE FOR TOTAL TIME IN SECONDS

Warranty

All catalog-listed THL-8 Series Encapsulated Time Delay Relays manufactured by Macromatic are warranted to be free from defects in workmanship or material under normal service and use for a period of five (5) years from date of manufacture.