ON DELAY | INLINE (SERIES CONNECTION)

SOLID STATE OUTPUT | ANALOG-SET | THL-1 SERIES

- Universal input voltage: 24-240V AC & 12-48V DC
- Onboard & remote adjustable or fixed time delays from 0.01 seconds to 100 hours
- 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

c UL us CE

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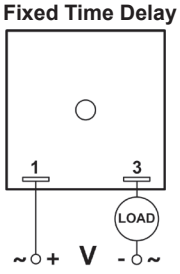
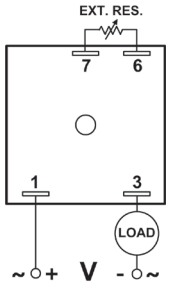
FUNCTION ■	INPUT VOLTAGE	CATALOG NUMBER **	WIRING
ON DELAY **A**	24-240V AC & 12-48V DC	THL-1024U-**	**Onboard Adjustable or Fixed Time Delay**  **DIAGRAM 329** **Remote Time Delay**  **DIAGRAM 330**

■ See "Definitions of Timing Functions".
** Complete Product Number using two-digit Code from Table below.

TIME DELAYS

THL-1 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., THL-1024U-30 is an On Delay with a time delay range of 0.1-10 seconds.
- **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., THL-1024U-F5S is an On Delay with a time delay fixed at 5 seconds.
- **Remote Time Delay**--THL-1 Series products can be built with two terminals for remote adjustable or fixed time delays.

** TIMING RANGE TABLE	
Time Delay Range	Code
0.01 - 1 Sec.	02
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

Build your Time Delay Relays with the ***Online Product Builder***

ON DELAY | INLINE (SERIES CONNECTION)

Solid State Output | Analog-Set | THL-1 Series

Application Data

Voltage Tolerance:
AC Operation: +10 to -15% of nominal voltage, 50/60 Hz
DC Operation: +10 to -15% of nominal voltage

Load (Burden): Maximum of 1 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 ± 0.01 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: -28° to 65°C (-18° 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): < 5ma @ 240V AC

Minimum Load Current: 20ma

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

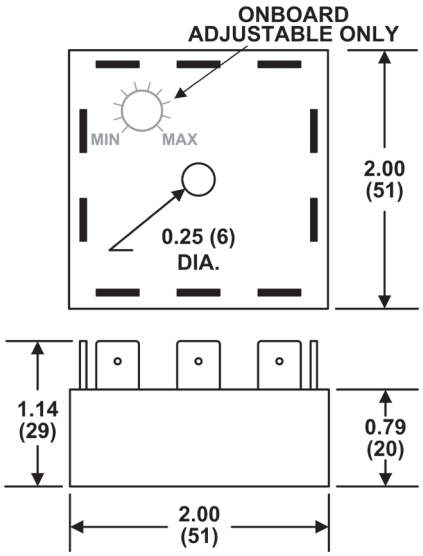
Compatibility:
Using a solid state switch to initiate the time sequence is acceptable. See ***www.macromatic.com/leakage*** or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

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

Termination:
0.25" male quick-connect terminals

Approvals: c UL us File #E236146 CE

Dimensions



All Dimensions in
Inches (Millimeters)

Remote Time Delay

THL-1 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., THL-1024U-30R1.

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:

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