



INSTALLATION INSTRUCTIONS

THL-1, THR-1 & THS-1 SERIES ENCAPSULATED TIME DELAY RELAYS

December 2020 Rev E

901-0000-292

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.
 NOTE: For products that use a Trigger to initiate the unit, this Trigger must be a dry-type contact (**applying voltage to the terminals could damage the unit**). For DC Input Voltages, make sure the polarity matches the connection diagram. 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.

WARRANTY

All catalog-listed products 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 the date of manufacture.

SETTING THE TIME DELAY

All THL-1, THR-1 & THS-1 Series products, except those with fixed time delays ("-Fxx" suffix), come with a specific single time delay range as indicated on the nameplate and by the suffix to the Product Number. Adjust the time delay within the specific time range by rotating the knob located on the top of the unit (or remotely if "-Rxx" suffix). Note: the dial markings are for reference only.

TROUBLESHOOTING

If the unit fails to operate properly, check that all connections are correct per the connection diagram on the product. For DC Input Voltages, make sure the polarity matches the connection diagram. Use the descriptions of how each function operates below & on back of this sheet as a guide to determine if the unit is operating properly. If problems continue, visit our website at www.macromatic.com/contact for more information.

Function	Product Series	Operation	Timing Chart
ON DELAY Delay on Operate	THL-102 THR-102 THS-102	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	THR-105 THS-105	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.	
FLASHER OFF First	THR-108 THS-108	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.	
FLASHER ON First	THR-109 THS-109	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.	
WATCHDOG Retriggerable Single Shot	THR-113 THS-113	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.	
SINGLE SHOT One Shot Momentary Interval	THR-115 THS-115	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.	



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Function	Product Series	Operation	Timing Chart
OFF DELAY Delay on Release Delay on Break Delay on De-Energization	THR-116 THS-116	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 (TRAILING EDGE) Retriggerable	THR-122 THS-122	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.	
REPEAT CYCLE OFF First	THR-131 THS-131	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.	
ON DELAY/ OFF DELAY	THR-141 THS-141	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 re-applied during time delay period (t2), the output will remain energized and the time delay (t2) will reset.	
REPEAT CYCLE ON First	THR-151 THS-151	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	THR-161 THS-161	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.	
DELAYED INTERVAL (Triggered) Single Cycle	THR-165 THS-165	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.	