

August, 2011 Rev B

WIRING

Wire the socket per the wiring diagram on the side of the time delay relay. **Make sure to match the terminal numbers on the socket to the ones shown on the wiring diagram.** Use one or two #12-22 solid or stranded wire with Macromatic sockets, with a recommended terminal tightening torque of 6-7 in-lbs (maximum of 12 in-lbs). NOTE: For products that use a 5-6 Trigger to initiate the unit, this Trigger must be a dry-type contact (**applying voltage to the pins could damage the unit**). For products using a Power Trigger to initiate the unit, the Power Trigger is the application of voltage with a value equal to the Input Voltage. For DC Input Voltages, make sure the polarity matches the wiring 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 TR-5 Series non-programmable 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. Note: the dial markings are for reference only.

TROUBLESHOOTING

If the unit fails to operate properly, check that all connections are correct per the wiring diagram on the product. For DC Input Voltages, make sure the polarity matches the wiring diagram. Use the descriptions of how each function operates below & on back as a guide to determine if the unit is operating properly. If problems continue, visit our website at www.macromatic.com. Or contact Macromatic at 800-238-7474 for assistance.

IMPORTANT: TR-506 & TR-546 relays are shipped from the factory in the OFF state. A shock to the relay during shipping or installation may cause it to change to the ON state. Input voltage should be applied to the product for at least 0.1 second & removed to cycle the unit to the OFF state prior to use in the application. Please note that it will take as long as the OFF Delay setting to reset the unit once input voltage has been removed.

Function	Product	Operation	Timing Chart
ON DELAY Delay on Operate	TR-502	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	TR-505	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.	
TRUE OFF DELAY Power Off Delay	TR-506	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.	
FLASHER OFF First	TR-508	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	TR-509	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.	
WATCHDOG Retriggerable Single Shot	TR-513 (5-6 Trigger) TR-518 (Power Trigger)	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	TR-515 (5-6 Trigger) TR-517 (Power Trigger)	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.	

Function	Product	Operation	Timing Chart
OFF DELAY Delay on Release Delay on Break Delay on De-Energization	TR-516 (5-6 Trigger) TR-519 (Power Trigger)	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.	<p>INPUT VOLTAGE: High</p> <p>TRIGGER: Pulses</p> <p>OUTPUT: Energized during trigger, then delayed de-energization for time t.</p>
SINGLE SHOT FALLING EDGE	TR-522 (5-6 Trigger)	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.	<p>INPUT VOLTAGE: High</p> <p>TRIGGER: Pulses at falling edge</p> <p>OUTPUT: Energized for time t after trigger.</p>
REPEAT CYCLE OFF First	TR-531	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.	<p>INPUT VOLTAGE: High</p> <p>OUTPUT: Energized for t1, de-energized for t2, repeats.</p>
ON/OFF DELAY	TR-541 (5-6 Trigger)	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.	<p>INPUT VOLTAGE: High</p> <p>TRIGGER: Pulses</p> <p>OUTPUT: Energized for t1, then t2 after trigger removal.</p>
ON DELAY / TRUE OFF DELAY	TR-546	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.	<p>INPUT VOLTAGE: Pulses</p> <p>OUTPUT: Energized for t1, then t2 after input voltage removal.</p>
REPEAT CYCLE ON First	TR-551	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.	<p>INPUT VOLTAGE: High</p> <p>OUTPUT: De-energized for t1, energized for t2, repeats.</p>
DELAYED INTERVAL Single Cycle	TR-561	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.	<p>INPUT VOLTAGE: Pulses</p> <p>OUTPUT: Energized for t1, then t2 after input voltage removal.</p>
DELAYED INTERVAL (Triggered) Single Cycle	TR-565 (5-6 Trigger)	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.	<p>INPUT VOLTAGE: High</p> <p>TRIGGER: Pulses</p> <p>OUTPUT: Energized for t1, then t2 after trigger.</p>