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. Time delay relays are available as plug-in units for use with industry standard 8 & 11 pin octal or 11 pin blade sockets. They also come in 1/16 DIN & 17.5mm mounting configurations. Choose between analog or digital-set time delay relays. Refer to the Selection Table on these two pages for more information.

	<i>Time Ranger</i> Multi-Range Programmable Plug-in	Standard Non-Programmable Single-Range Plug-in	<i>Time Ranger</i> Digital-Set Multi-Range Programmable Plug-in	<i>Time Ranger</i> Digital-Set Multi-Range Programmable Plug-in	
Series	TR-6	TR-5	TD-7	TD-8	
	Binnelle Strelle M	No. 10 State of State	The second se		
Timing Functions Available	* On Delay * Interval On * Flasher * Off Delay * Single Shot * Watchdog * Repeat Cycle * Delayed Interval * True Off Delay	* On Delay * Interval On * Flasher * Off Delay * Single Shot * Watchdog * Repeat Cycle * Delayed Interval * On Delay/True Off Delay	Available as both multi- function & single-function * On Delay * Interval On * Flasher * Off Delay * Single Shot	Available as both multi- function with 16 functions (Page 70) & single- function (Page 71)	
Timing Ranges Available	16 field-programmable timing ranges covering up to 2 Hours (24 Hours on Dual Knob units) in one unit (True Off Delay has 8 programmable timing ranges up to 30 minutes)	11 separate timing ranges from 0.05 Seconds to 2 Hours	50ms - 999 Hours Programmable Time Range	100ms - 1,023 Hours (Multi-Function) or 100ms - 1,023 Minutes (Single-Function) Programmable Time Range	
Output Contacts	DPDT 10A @ 240V AC 10A @ 30V DC 1/2HP @ 120/240V AC (N.O.) 1/3HP @ 120/240V AC (N.C.) B300/R300				
Input Voltages	12V AC/DC, 24V AC/DC, 120V AC/DC & 240V AC				
Approvals	FN @ ((91 () ()	FL 🚯 (E	c SL us	
	With Appropriate Macromatic Socket	With Appropriate Macromatic Socket	ULISTED with Appropriate Macromatic Socket	With Appropriate Macromatic Socket	
See Page	54-59	60-65	68 & 69	70-73	

PRODUCT SUMMARY

See pages 52 & 53 for a detailed description of all timing functions available. If you have any questions regarding the selection or application of time delay relays, either visit our on-line Technical Resource Center (www.macromatic.com) or call us at 800-238-7474.

Need modifications such as fixed time delays, remote adjustments or special pin configurations? We can do most of these modifications within our normal lead-times. See page 80 for more information.

	Compact Non-Programm- able Single Range Plug-in	Spade Base Non-Programm- able Single Range Plug-in	<i>Time Ranger</i> Digital-Set Multi-Function Multi-Range Programmable 1/16 DIN	<i>Time Ranger</i> Analog-Set Multi-Function Multi-Range Programmable 1/16 DIN	Analog-Set Multi-Function Multi-Range Programmable 17.5mm
Series	SS-6 & SS-8	SS-4	TAD	TAA	TE-881
			MACROMATIC A 15.5 - A 15.5 - A 15.5 - A 15.5 - T 15		the second
Timing Functions Available	* On Delay * Interval On * Off Delay * Single Shot	* On Delay * Off Delay	10 Field- Selectable Functions in One Unit (See Page 74 for details)	Two Versions, Each with 6 Field- Selectable Functions in One Unit (See Page 76 for details)	10 Field- Selectable Functions in One Unit (See Page 78 for details)
Timing Ranges Available	6 separate timing ranges from 0.02 to 300 Seconds	3 separate timing ranges from 0.1 to 300 Seconds	10ms to 9,990 Hours programmable timing range	10ms to 100 Hours programmable timing range	100ms to 10 Days programmable timing range
Output Contacts	SPDT 5A @ 120V AC 5A @ 28V DC 1/6HP @ 120V AC	DPDT 12A @ 240V AC 12A @ 30V DC 1/2HP @ 240V AC B300/R300	SPDT 5A @ 250V AC	DPDT 3A @ 250V AC	SPDT 16A @ 240V AC 16A @ 24V DC
Input Voltages	12V AC/DC, 24V AC/DC & 120V AC	24V AC/DC & 120V AC/DC	Universal 24-240V AC/ DC in one unit	Universal 24-240V AC/ DC in one unit	Universal 12-240V AC/ DC in one unit
Approvals	c RL us	9) @ ((₽ ₽1 us (€	c ₩J us (€	
	USTED with Appropriate Macromatic Socket	ULISTED with Appropriate Macromatic Socket			CE
See Page	66	67	74-75	76-77	78-79

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:

- application of input voltage (On Delay, Interval On, Flasher, Repeat Cycle & Delayed Interval)
- opening or closing of a trigger signal (Off Delay, Single Shot, Watchdog & Triggered Delayed Interval)

These trigger signals can be one of two designs: a control switch (dry contact), i.e., limit switch, push button, float switch, etc., or by voltage (commonly known as a power 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 signal is applied.
- Trigger Signal on certain timing functions, a trigger signal is used to initiate the unit after input voltage has been applied. As noted above, this trigger signal can either be a control switch (dry contact switch) or a power trigger (voltage).
- Output (Load) every time delay relay has an internal relay (usually mechanical) with contacts that open & close to ٠ control the load. They are represented by the dotted lines in the wiring diagrams. Note that the user must provide the voltage to power the load being switched by the output contacts of the time delay relay.

Below and on the following page are both written and visual descriptions on how the common timing functions operate. A Timing Chart shows the relationship between Input Voltage, Trigger Signal (if present) and Output Contacts. 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.



DEFINITION OF TIMING FUNCTIONS

Function	Operation	Timing Chart
WATCHDOG Retriggerable Single Shot	Upon application of input voltage, the time delay relay is ready to accept trigger signals. Upon application of the trigger signal, the relay is energized and the preset time begins. At the end of the preset time, the relay is de-energized unless the trigger signal is closed and opened prior to time out (before preset time elapses). Continuous cycling of the trigger signal at a rate faster than the preset time will cause the relay to remain energized.	INPUT ON POWER (VOLTAGE) OFF TRIGGER SIGNAL OPEN RELAY ON OUTPUT (LOAD) OFF OFF CLOSED CLOSE
FLASHER	Upon application of input voltage, the preset time (T1) begins. At the end of the preset time, the relay is energized and remains in that condition for the preset time (T1). At the end of this time, the relay is de- energized and the sequence repeats until input voltage is removed.	INPUT ON POWER (VOLTAGE) OFF OUTPUT (LOAD) OFF T1 T1 T1 T1 T1 ACTION CONTINUES UNTIL POWER IS REMOVED
REPEAT CYCLE Off/On Delay	Upon application of input voltage, a preset delay begins (OFF). At the end of the preset delay, the relay is energized and remains in that condition for a second, independently adjustable preset time (ON). At the end of this time, the relay is de-energized and the sequence repeats until input voltage is removed.	NPUT ON POWER (VOLTAGE) OFF ON
REPEAT CYCLE On/Off Delay	Upon application of input voltage, the relay is energized and a preset delay begins (ON). At the end of the preset delay, the relay is de-energized and remains in that condition for a second, independently adjustable preset time (OFF). At the end of this time, the relay is energized and the sequence repeats until input voltage is removed.	INPUT ON POWER (VOLTAGE) OFF (VOLTAGE) OFF OUTPUT (LOAD) OFF ON OFF OFF ON OFF ACTION CONTINUES UNTIL POWER IS REMOVED
DELAYED INTERVAL Single Cycle	Upon application of input voltage, a preset delay begins (OFF). At the end of the preset delay, the relay is energized and remains in that condition for a second, independently adjustable preset time (ON). At the end of the second preset time, the relay is de-energized. Input voltage must be removed and reapplied to reset the time delay relay.	NO FURTHER ACTION UNTIL POWER
DELAYED INTERVAL (TRIGGERED) Single Cycle	Upon application of input voltage, the time delay relay is ready to accept trigger signals. Upon application of the trigger signal, a preset delay begins (OFF). At the end of the preset delay, the relay is energized and remains in that condition for a second, independently adjustable preset time (ON). At the end of the second preset time, the relay is de-energized. During both the OFF time & the ON time, the trigger signal is ignored.	INPUT ON POWER (VOLTAGE) OFF CLOSED TRIGGER SIGNAL OPEN OUTPUT ON (LOAD) OFF OFF ON OFF ON OFF ON OFF
	Upon application of input voltage, the relay is ener- gized. When the input voltage is removed, the preset time begins. At the end of the preset time, the relay is de-energized. Voltage must be applied for a minimum of 0.1 seconds to assure proper operation. Any application of the input voltage during the preset time will keep the relay energized & reset the time delay. No external trigger switch is required.	INPUT ON POWER (VOLTAGE) OFF OUTPUT ON (LOAD) OFF

TIME RANGER[™] PROGRAMMABLE **MULTI-RANGE PLUG-IN ON DELAY, INTERVAL ON & FLASHER**



- Each unit has 16 timing ٠ ranges built-in
- Selecting a range is easy ٠ using a rotary switch (no math is required or DIP switches to set)
- Timing ranges up to 2 hours ٠
- Uses industry-standard 8 pin octal sockets
- 10A DPDT output contacts





SINGLE KNOB UNITS				
	INPUT VOLTAGE 50/60Hz.		WIRING/ SOCKETS	
ON DELAY	120V AC/DC 12V AC/DC 24V AC/DC 240V AC 120V AC/DC 120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-60222 TR-60226 TR-60228 TR-60221 TR-60522 TR-60526 TR-60528 TR-60521	8 PIN OCTAL 70169-D	
FLASHER	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-60822 TR-60826 TR-60828 TR-60821	INPUT VOLTAGE DIAGRAM 1	

■ See Pages 52 & 53 for definitions & explanations of Timing Functions.

Sockets & Accessories–Pages 81 & 82 Dimensions-Page 57

Application Data-Page 57 Standard Modifications-Page 80

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit and adjust within that range using the knob

on top:

SINGLE KNOB UNITS

Dial Setting	Timing Range
А	0.1 - 0.25 Sec.
В	0.2 - 0.5 Sec.
С	0.3 - 1 Sec.
D	0.5 - 2 Sec.
E	1 - 4 Sec.
F	2 - 8 Sec.
G	4 - 15 Sec.
Н	8 - 30 Sec.
I	15 - 60 Sec.
J	30 - 120 Sec.
К	1 - 4 Min.
L	2 - 8 Min.
М	4 - 15 Min.
N	8 - 30 Min.
0	15 - 60 Min.
Р	30 - 120 Min.



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TIME DELAY RELAYS TIME RANGER[™] PROGRAMMABLE

MULTI-RANGE PLUG-IN OFF DELAY, SINGLE SHOT & WATCHDOG



SINGLE KNUB UNITS	S	SINGL	E KNO	OB UN	ITS
-------------------	---	-------	-------	-------	-----

FUNCTION ■	INPUT VOLTAGE 50/60Hz.	PRODUCT NUMBER	WIRING/ SOCKETS
OFF DELAY	120V AC/DC	TR-61622	11 PIN OCTAL
Control Switch Trigger	12V AC/DC	TR-61626	70170-D
	24V AC/DC	TR-61628	CONTROL SWITCH
	240V AC	TR-61621	
SINGLE SHOT	120V AC/DC	TR-61522	F - 4 & E - 7
Control Switch Trigger	12V AC/DC	TR-61526	
	24V AC/DC	TR-61528	
	240V AC	TR-61521	
WATCHDOG	120V AC/DC	TR-61322	NIPUT VOLTAGE
Control Switch Trigger	12V AC/DC	TR-61326	DIAGRAM 2
(Retriggerable	24V AC/DC	TR-61328	DIAGRAM 2
Single Shot)	240V AC	TR-61321	
OFF DELAY	120V AC/DC	TR-61922	11 PIN OCTAL
Power Trigger	12V AC/DC	TR-61926	70170-D
	24V AC/DC	TR-61928	POWER
	240V AC	TR-61921	TRIGGER +
SINGLE SHOT	120V AC/DC	TR-61722	
Power Trigger	12V AC/DC	TR-61726	= - 4 ⁵ 7 ⁸
	24V AC/DC	TR-61728	
	240V AC	TR-61721	
WATCHDOG	120V AC/DC	TR-61822	(DC)+ (DC)-
Power Trigger	12V AC/DC	TR-61826	INPUT VOLTAGE
(Retriggerable	24V AC/DC	TR-61828	AS INPUT VOLTAGE
Single Shot)	240V AC	TR-61821	DIAGRAM 4

Each unit has 16 timing ranges built-in

- Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- Timing ranges up to 2 hours
- Uses industry-standard 11 pin octal sockets
- 10A DPDT output contacts



■ See Pages 52 & 53 for definitions & explanations of Timing Functions.

Sockets & Accessories–Pages 81 & 82 Dimensions-Page 57

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TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit and adjust within that range using the knob on top:

SINGLE KNOB UNITS				
Dial Setting	Timing Range			
А	0.1 - 0.25 Sec.			
В	0.2 - 0.5 Sec.			
С	0.3 - 1 Sec.			
D	0.5 - 2 Sec.			
E	1 - 4 Sec.			
F	2 - 8 Sec.			
G	4 - 15 Sec.			
Н	8 - 30 Sec.			
I	15 - 60 Sec.			
J	30 - 120 Sec.			
К	1 - 4 Min.			
L	2 - 8 Min.			
М	4 - 15 Min.			
N	8 - 30 Min.			
0	15 - 60 Min.			
Р	30 - 120 Min.			



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TIME RANGER[™] PROGRAMMABLE MULTI-RANGE PLUG-IN Repeat Cycle & Delayed Interval





- Each unit has 16 timing ranges built-in
- Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- Timing ranges up to 24 hours
- Independently selectable & adjustable ON & OFF times on dual knob timers
- Uses industry-standard 8 or 11 pin octal sockets
- 10A DPDT output contacts



DUAL KNOB UNITS *				
FUNCTION ■	INPUT VOLTAGE 50/60Hz.	PRODUCT NUMBER	WIRING/ SOCKETS	
REPEAT CYCLE (OFF Time First Followed By ON Time and Repeating) REPEAT CYCLE (ON Time First Followed By OFF Time	120V AC/DC 12V AC/DC 24V AC/DC 240V AC 120V AC/DC 12V AC/DC 24V AC/DC 24V AC/DC	TR-63122 TR-63126 TR-63128 TR-63121 TR-65122 TR-65126 TR-65128	8 PIN OCTAL 70169-D	
DELAYED INTERVAL (OFF Time Followed by ON Time Followed by OFF State Until Reset)	240V AC 120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-65121 TR-66122 TR-66126 TR-66128 TR-66121	INPUT VOLTAGE	
DELAYED INTERVAL Control Switch Trigger (OFF Time / ON Time / OFF State Until Reset)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-66522 TR-66526 TR-66528 TR-66521	11 PIN OCTAL 70170-D	

All Dual Knob units have independently selectable & adjustable ON & OFF times.

See Pages 52 & 53 for definitions & explanations of Timing Functions.

Sockets & Accessories–Pages 81 & 82 Dimensions–Page 57 Application Data–Page 57 Standard Modifications–Page 80

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit and adjust within that range using the knob on top:

DUAL KNOB UNITS			
Dial Setting	Timing Range		
А	0.6 - 2.5 Sec.		
В	1.5 - 5 Sec.		
С	2.5 - 10.5 Sec.		
D	5 - 21 Sec.		
E	10 - 42 Sec.		
F	0.4 - 1.4 Min.		
G	0.7 - 2.8 Min.		
н	1.5 - 5.5 Min.		
	3 - 11 Min.		
J	5.5 - 22.5 Min.		
K	11 - 45 Min.		
L	0.4 - 1.5 Hr.		
М	0.8 - 3 Hr.		
N	1.5 - 6 Hr.		
0	3 - 12 Hr.		
Р	6 - 24 Hr.		
	DUAL Dial Setting A B C D E F G H I J K L M N O P		



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TIME RANGER[™] PROGRAMMABLE MULTI-RANGE PLUG-IN APPLICATION DATA & DIMENSIONS

APPLICATION DATA

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

Load (Burden): 2 VA

2 17

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0% Minimum Setting (Adjustable): +0%, -50%

Repeat Accuracy (constant voltage and temperature):

> 2 Seconds Delay <u>+</u>0.1% 0.1 - 2 Seconds Delay +2%

Reset Time:

On Delay/Interval/Repeat Cycle/Delayed Interval: 0.1 Seconds Off Delay/Single Shot/Watchdog/ Triggered Delayed Interval: 0.04 Seconds

Start-up Time:

(Time from when power is applied until unit is timing) 120 & 240V units 0.05 Seconds 12, 24 & 48V units 0.08 Seconds

Maintain Function Time:

(Time unit continues to time after power is removed) 0.01 Seconds for all units

Temperature:

12-120V Input Voltage: -28° to 65°C (-18° to 150°F) 240V Input Voltage: -28° to 50°C (-18° to 122°F)

Insulation Voltage:

2,000 volts

Output Contacts:

DPDT 10A @ 240V AC/30V DC, 1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.) B300 & R300; AC15 & DC13

Life:

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

Compatibility:

On all units triggered by input voltage or by a control switch, do not use a solid state switch to initiate the timing sequenceproblems with leakage current could occur. On all units with a power trigger, do not use a solid state switch with leakage current exceeding 0.5ma. Contact Macromatic Controls for additional information.

Triggering Off Delay, Single Shot or Watchdog Units:

Timing sequence must be initiated only after input voltage is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

Approvals:







with appropriate socket File #E109466

DIMENSIONS



TIME RANGER[™] PROGRAMMABLE PLUG-IN TRUE OFF DELAY



- Provides Off Delay function without requiring input voltage during Off time delay
- Duplicates operation of pneumatic Off Delay timers
- Each unit has 8 timing ranges built-in, covering 0.05 seconds to 30 minutes
- Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- Uses industry-standard 8 pin octal socket
- ♦ 10A DPDT output contacts



with appropriate socket Most electronic time delay relays with an off delay function require input voltage to be applied continuously in order to operate correctly. However, there are many applications where this is not possible--keeping a relay energized for some amount of time after input voltage has been removed. A true off delay product provides this function even when input voltage is removed. It duplicates the operation of the older off delay pneumatic time delay relays.

<u>Operation of True Off Delay</u>: Upon application of input voltage, the relay is energized. When the input voltage is removed, the preset time begins. At the end of the preset time, the relay is deenergized. **Voltage must be applied for a minimum of 0.1 second to assure proper operation.** Any application of



the input voltage during the preset time will keep the relay energized & reset the time delay. No external trigger switch is required.

INPUT VOLTAGE 50/60Hz.	TIMING RANGE	PRODUCT NUMBER	WIRING/ SOCKETS
120V AC/DC	0.05 Sec 30 Min.	TR-60622	8 PIN OCTAL 70169-D
24V AC/DC	0.05 Sec 30 Min.	TR-60628	4 5 6 2 1 8 -(DC)
240V AC	0.05 Sec 30 Min.	TR-60621	LI J J L2 INPUT VOLTAGE DIAGRAM 1

Sockets & Accessories–Pages 81 & 82 Dimensions–Page 59 Application Data–Page 59 Standard Modifications–Page 80

TIMING RANGES

Select one of the 8 built-in time ranges by setting the rotary switch per the chart on the unit or below and adjust within that range using the knob on top:



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TIME RANGER[™] PROGRAMMABLE PLUG-IN TRUE OFF DELAY

APPLICATION DATA & DIMENSIONS

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden):

2 VA

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0% Minimum Setting (Adjustable): +0%, -50%

<u>Repeat Accuracy</u> (constant voltage and temperature): $\pm 1\%$ or 50ms, whichever is greater

Start-up Time:

(Time from when power is applied until unit is timing) 0.05 Seconds

Temperature:

-28° to 65°C (-18° to 150°F)

Insulation Voltage:

2,000 volts

Output Contacts:

DPDT 10A @ 240V AC; 10A @ 28V DC, 1/2 HP @ 240V AC, 1/4HP @ 120V AC B300 & R300

Life:

Mechanical: 2,000,000 operations Full Load: 100,000 operations

Approvals:



US (

with appropriate socket File #E109466

IMPORTANT: These 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. It is recommended that input voltage be applied to the product for at least 0.1 second and 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.

DIMENSIONS



NON-PROGRAMMABLE PLUG-IN ON DELAY, INTERVAL & FLASHER



- Each unit has a single timing range
- Choose from 11 separate timing ranges from 0.02 Seconds to 2 Hours
- Uses industry-standard 8 pin octal sockets
- 10A DPDT output contacts



SINGLE KNOB UNITS				
FUNCTION	INPUT VOLTAGE 50/60Hz.	PRODUCT NUMBER ** COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW	WIRING/ SOCKETS ▲	
ON DELAY	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-50222-** TR-50226-** TR-50228-** TR-50221-**	8 PIN OCTAL ▲ 70169-D	
INTERVAL ON	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-50522-** TR-50526-** TR-50528-** TR-50521-**	45 3 45 6 2 1 7 (DC)+	
FLASHER	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-50822-** TR-50826-** TR-50828-** TR-50821-**	INPUT VOLTAGE	

■ See Pages 52 & 53 for definitions & explanations of Timing Functions.

▲ Note: if these products are ordered with the Remote Adjust Potentiometer modification (suffix -Rx), they will require an 11 pin octal socket–see Page 80 for more information.

Sockets & Accessories–Pages 81 & 82 Dimensions–Page 63 Application Data–Page 63 Standard Modifications–Page 80

TIMING RANGES

** TIMING RANGE TABLE COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE FROM TABLE BELOW				
	i.e., TR-5	0222-04		
Time Delay Range	<u>Code</u>	Time Delay Range	Code	
0.05 - 5 Sec.	04	3 - 300 Sec.	12	
0.1 - 10 Sec.	05	0.1 - 10 Min.	22	
0.3 - 30 Sec.	07	0.3 - 30 Min.	15	
0.6 - 60 Sec.	08	0.6 - 60 Min.	16	
1.2 - 120 Sec.	09	1.2 - 120 Min.	17	
1.8 - 180 Sec.	10			

For Fixed Time Delay, add suffix "F" and time delay desired to basic Product Number, i.e., TR-50222-F5S is an On Delay with a time delay fixed at 5 seconds.

NOTE: Macromatic has obsoleted several time ranges that are no longer available on these products--for more information, please contact Macromatic.



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TIME DELAY RELAYS NON-PROGRAMMABLE PLUG-IN OFF DELAY, SINGLE SHOT & WATCHDOG

SINGLE KNOB UNITS			
FUNCTION	INPUT VOLTAGE 50/60Hz.	PRODUCT NUMBER ** COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW	WIRING/ SOCKETS
OFF DELAY Control Switch Trigger	120V AC/DC 12V AC/DC	TR-51622-** TR-51626-**	11 PIN OCTAL 70170-D
	24V AC/DC 240V AC 120V AC/DC	TR-51628-** TR-51621-**	CONTROL SWITCH
Control Switch Trigger	1200 AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51522- TR-51526-** TR-51528-** TR-51521-**	
WATCHDOG Control Switch Trigger (Retriggerable Single Shot)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51322-** TR-51326-** TR-51328-** TR-51321-**	INPUT VOLTAGE
OFF DELAY Power Trigger	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51922-** TR-51926-** TR-51928-** TR-51928-**	11 PIN OCTAL 70170-D
SINGLE SHOT Power Trigger	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51722-** TR-51726-** TR-51728-** TR-51721-**	
WATCHDOG Power Trigger (Retriggerable	120V AC/DC 12V AC/DC 24V AC/DC	TR-51822-** TR-51826-** TR-51828-**	(DC)+J J (DC)- INPUT VOLTAGE *SHOULD RESAME VOLTAGE AS INPUT VOLTAGE
Single Shot)	240V AC	TR-51821-**	

- Each unit has a single timing range
- Choose from 11 separate timing ranges from 0.02 Seconds to 2 Hours
- Uses industry-standard 11 pin octal sockets
- ♦ 10A DPDT output contacts



■ See Pages 52 & 53 for definitions & explanations of Timing Functions.

▲ 8 Pin SPDT versions of these functions are available-see Page 64.

Sockets & Accessories–Page 81 & 82 Dimensions–Page 63 Application Data–Page 63 Standard Modifications–Page 80

TIMING RANGES

** TIMING RANGE TABLE COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE FROM TABLE BELOW				
	i.e., TR-51622-04			
Time Delay Range	<u>Code</u>	Time Delay Range	Code	
0.05 - 5 Sec.	04	3 - 300 Sec.	12	
0.1 - 10 Sec.	05	0.1 - 10 Min.	22	
0.3 - 30 Sec.	07	0.3 - 30 Min.	15	
0.6 - 60 Sec.	08	0.6 - 60 Min.	16	
1.2 - 120 Sec.	09	1.2 - 120 Min.	17	
1.8 - 180 Sec.	10			

For Fixed Time Delay, add suffix "F" and time delay desired to basic Product Number, i.e., TR-51622-F5S is an Off Delay with a time delay fixed at 5 seconds.

NOTE: Macromatic has obsoleted several time ranges that are no longer available on these products--for more information, please contact Macromatic.



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NON-PROGRAMMABLE PLUG-IN REPEAT CYCLE & DELAYED INTERVAL





- Each unit has a single timing range
- Choose from 11 separate timing ranges from 0.02 Seconds to 2 Hours
- Independently adjustable ON & OFF times on dual knob timers
- Uses industry-standard 8 or 11 pin octal sockets
- 10A DPDT output contacts





	INPUT VOLTAGE 50/60Hz.	PRODUCT NUMBER ** COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW	WIRING/ SOCKET
REPEAT CYCLE (OFF Time First Followed By ON Time and Repeating)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-53122-** TR-53126-** TR-53128-** TR-53121-**	8 PIN OCTAL 70169-D
REPEAT CYCLE (ON Time First Followed By OFF Time and Repeating) DELAYED INTERVAL (OFF Time Followed by ON Time Followed by OFF State Until Reset)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC 120V AC/DC 12V AC/DC 24V AC/DC 24V AC/DC 240V AC	TR-55122-** TR-55126-** TR-55128-** TR-55121-** TR-56122-** TR-56126-** TR-56128-** TR-56128-** TR-56121-**	(DC)* INPUT VOLTAGE DIAGRAM 1
DELAYED INTERVAL Control Switch Trigger (OFF Time Followed by ON Time Followed by OFF State Until Reset)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-56522-** TR-56526-** TR-56528-** TR-56521-**	11 PIN OCTAL 70170-D CONTROL SWATCH SWATCH 21 0 /10 (DC)- INPUT VOL 1AGE DIAGRAM 2

DUAL KNOB UNITS *

- All Dual Knob units have independently selectable & adjustable ON & OFF times. To order a Dual Knob unit with the <u>same ON & OFF timing ranges</u>, complete the Product Number by adding one two-digit code from the table below, i.e., a TR-55122-08 is a Repeat Cycle unit with both the ON time & OFF time adjustable between 0.6 60 seconds. To order a Dual Knob unit with <u>different ON & OFF timing ranges</u>, complete the Product Number by adding two different two-digit codes from the table below. The first suffix indicates the first timing range of the unit and the second suffix indicates the second timing range, i.e., a TR-53122-05-12 is a Repeat Cycle unit with an OFF timing range first of 0.1-10 seconds and an ON timing range second of 3-300 seconds.
- See Pages 52 & 53 for definitions & explanations of Timing Functions.

Time Delay Range

0.05 - 5 Sec.

0.1 - 10 Sec.

0.3 - 30 Sec.

0.6 60 500

Sockets & Accessories–Pages 81 & 82 Dimensions–Page 63 Application Data–Page 63 Standard Modifications–Page 80

Time Delay Range

0 1 - 10 Min

0.3 - 30 Min.

06

3 - 300 Sec.

60 Min

TIMING RANGES



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0.0 - 00 000.	00	0.0 - 00 10111.	10	
1.2 - 120 Sec.	09	1.2 - 120 Min.	17	
1.8 - 180 Sec.	10			
NOTE: Macromatic has obsoleted several time ranges that are no				
longer available on these productsfor more information, please				
contact Macromatic.				

** TIMING RANGE TABLE COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE FROM TABLE BELOW i.e., TR-55122-04

Code

04

05

07

ΛQ

Code

12

22

15

16

NON-PROGRAMMABLE PLUG-IN APPLICATION DATA & DIMENSIONS

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden): 2 VA

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0% Minimum Setting (Adjustable): +0%, -50% Fixed Time Delay: > 2 Seconds +1% 0.1 - 2 Seconds +5%

Repeat Accuracy (constant voltage and temperature): > 2 Seconds Delay +0.1%

0.1 - 2 Seconds Delay +2%

Reset Time:

On Delay/Interval/Repeat Cycle/Delayed Interval: 0.1 Seconds Off Delay/Single Shot/Watchdog/ Triggered Delayed Interval: 0.04 Seconds

Start-up Time:

(Time from when power is applied until unit is timing) 120 & 240V units 0.05 Seconds 12. 24 & 48V units 0.08 Seconds

Maintain Function Time:

(Time unit continues to time after power is removed) 0.01 Seconds for all units

Temperature:

12-120V Input Voltage: -28° to 65°C (-18° to 150°F) -28° to 50°C (-18° to 122°F) 240V Input Voltage:

Insulation Voltage:

2.000 volts

Output Contacts:

DPDT 10A @ 240V AC/30V DC, 1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.) B300 & R300; AC15 & DC13

Life:

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

Compatibility:

On all units triggered by input voltage or by a control switch, do not use a solid state switch to initiate the timing sequenceproblems with leakage current could occur. On all units with a power trigger, do not use a solid state switch with leakage current exceeding 0.5ma. Contact Macromatic Controls for additional information.

Triggering Off Delay, Single Shot or Watchdog Units:

Timing sequence must be initiated only after input voltage is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

Approvals:











socket File #E109466

DIMENSIONS



NON-PROGRAMMABLE PLUG-IN 8 PIN SPDT VERSIONS OFF DELAY, SINGLE SHOT & WATCHDOG



NDII.



- These are 8 pin 10A SPDT versions of our standard 11 pin DPDT products
- Choose from 11 separate timing ranges from 0.02 Seconds to 2 Hours
- Uses industry-standard 8 pin octal socket



FUNCTION ■	VOLTAGE 50/60Hz.	NUMBER ** COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW	WIRING/ SOCKETS ▲
OFF DELAY Control Switch Trigger	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51662-** TR-51666-** TR-51668-** TR-51661-**	8 PIN OCTAL 70169-D ▲
SINGLE SHOT Control Switch Trigger	120V AC/DC 12V AC/DC 24V AC/DC 24V AC/DC 240V AC	TR-51562-** TR-51566-** TR-51568-** TR-51561-**	
WATCHDOG Control Switch Trigger (Retriggerable Single Shot)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51362-** TR-51366-** TR-51368-** TR-51361-**	(DC)+ L1 INPUT VOLTAGE DIAGRAM 11
OFF DELAY Power Trigger	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51962-** TR-51966-** TR-51968-** TR-51961-**	8 PIN OCTAL 70169-D ▲
SINGLE SHOT PowerTrigger	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51762-** TR-51766-** TR-51768-** TR-51761-**	7 4 6 2 0 7 (DC)+
WATCHDOG Power Trigger (Retriggerable Single Shot)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TR-51862-** TR-51866-** TR-51868-** TR-51861-**	INPUT VOLTAGE *SHOULD BE SAME VOLTAGE AS INPUT VOLTAGE DIAGRAM 37

See Pages 52 & 53 for definitions & explanations of Timing Functions.

Time Delay Range

0.05 - 5 Sec.

0.1 - 10 Sec.

0.3 - 30 Sec.

0.6 - 60 Sec.

1.2 - 120 Sec.

1.8 - 180 Sec.

contact Macromatic.

time delay fixed at 5 seconds.

▲ Note: if these products are ordered with the Remote Adjust Potentiometer modification (suffix -Rx), they will require an 11 pin octal socket-see Page 80 for more information.

Sockets & Accessories–Pages 81 & 82 Dimensions–Page 65 Application Data–Page 65 Standard Modifications–Page 80

Time Delay Range

0.1 - 10 Min.

0.3 - 30 Min.

0.6 - 60 Min.

1.2 - 120 Min.

3 - 300 Sec.

** TIMING RANGE TABLE COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE FROM TABLE BELOW i.e., TR-51662-04

For Fixed Time Delay, add suffix "F" and fixed time delay desired to

basic Product Number, i.e., TR-51662-F5S is an Off Delay with a

NOTE: Macromatic has obsoleted several time ranges that are no

longer available on these products--for more information, please

Code

04

05

07

08

09

10

TIMING RANGES



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12

22

15

16

17

TIME DELAY RELAYS **NON-PROGRAMMABLE PLUG-IN** 8 PIN SPDT VERSIONS **APPLICATION DATA & DIMENSIONS**

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden):

2 VA

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0% Minimum Setting (Adjustable): +0%, -50% Fixed Time Delay: > 2 Seconds +1% 0.1 - 2 Seconds +5%

Repeat Accuracy (constant voltage and temperature):

> 2 Seconds Delay +0.1% 0.1 - 2 Seconds Delay +2%

Reset Time:

Off Delay/Single Shot/Watchdog: 0.04 Seconds

Start-up Time:

(Time from when power is applied until unit is timing) 120 & 240V units 0.05 Seconds 12, 24 & 48V units 0.08 Seconds

Maintain Function Time:

(Time unit continues to time after power is removed) 0.01 Seconds for all units

Temperature:

12-120V Input Voltage: -28° to 65°C (-18° to 150°F) 240V Input Voltage: -28° to 50°C (-18° to 122°F)

Insulation Voltage:

2,000 volts

Output Contacts:

SPDT 10A @ 240V AC/30V DC, 1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.) B300 & R300; AC15 & DC13

Life:

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

Compatibility:

On all units triggered by a control switch, do not use a solid state switch to initiate the timing sequence-problems with leakage current could occur. On all units with a power trigger. do not use a solid state switch with leakage current exceeding 0.5ma. Contact Macromatic Controls for additional information.

Triggering Off Delay, Single Shot or Watchdog Units:

Timing sequence must be initiated only after input voltage is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

EN60947-1, EN60947-5-1

Approvals:









with appropriate socket File #E109466

DIMENSIONS



COMPACT NON-PROGRAMMABLE PLUG-IN







All Dimensions in Inches (Millimeters)

- Compact, economical design with standard features for basic applications
- 6 separate timing ranges from 0.2 to 300 seconds
- 5A SPDT output contacts
- Uses industry-standard 8 pin octal sockets



TIMING RANGES

** TIMING RANGE TABLE COMPLETE PRODUCT NUMBER USING TWO DIGIT CODE FROM TABLE BELOW i.e., SS-6262-04		
Time Delay Range	<u>Code</u>	
0.2 - 5 Sec.	04	
0.5 - 15 Sec.	06	
1 - 30 Sec.	07	
2 - 60 Sec.	08	
6 - 180 Sec.	10	
10 - 300 Sec.	12	

For Fixed Time Delay, add suffix "F" and time delay desired to basic Product Number, i.e., SS-6262-F5S is an On Delay fixed at 5 seconds.



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FUNCTION ■	INPUT VOLTAGE	PRODUCT NUMBER ** COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW LEFT	WIRING/ SOCKET●
ON DELAY	120V AC	SS-6262-**	8 Pin Octal
		SS-6266-**	70169-D
	24V AC/DC	33-0200-	¥ = 4 5
INTERVAL ON	120V AC	SS-8062-**	
	12V AC/DC	SS-8066-**	11.1 - 1.2
	24V AC/DC	SS-8068-**	INPUT VOLTAGE
			DIAGRAM 5
OFF DELAY	120V AC	SS-8562-**	8 Pin Octal
	12V AC/DC	SS-8566-**	70169-D
	24V AC/DC	SS-8568-**	
SINGLE SHOT	120V AC	SS-8762-**	2 11 8 T
	12V AC/DC	SS-8766-**	(DC)+
	24V AC/DC	SS-8768-**	INPUT VOLTAGE
			DIAGRAM 6
See Pages 52 & 5	3 for definitions & e	explanations of Timing F	unctions.

See Pages 81 & 82 for Sockets & Accessories.

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden):

Less than 3 VA

Setting Accuracy:

Maximum Setting: +10%, -0% Minimum Setting: +0%, -50% Fixed Time Delay: > 2 Seconds <u>+</u>2% 0.1 - 2 Seconds <u>+</u>5%

Repeat Accuracy:

> 2 Seconds Delay	<u>+</u> 2%
0.1 - 2 Seconds Delay	<u>+</u> 5%

Reset Time: 0.2 Seconds

Triggering Off Delay & Single Shot Units:

Timing sequence must be initiated only after input power is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

Temperature: 0° to 60°C (32° to 140°F)

Compatibility:

Do not use a solid state switch to initiate the timing sequence-problems with leakage current could occur. Contact Macromatic Controls for additional information.

Transient Protection: 10,000 volts for 20 microseconds

Output Contacts:

SPDT 5A @ 120V AC/28V DC, 1/6HP @ 120V AC

Life:

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



TIME DELAY RELAYS **NON-PROGRAMMABLE WITH**

QUICK CONNECT TERMINALS







All Dimensions in Inches (Millimeters)

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FUNCTION	INPUT VOLTAGE	TIME DELAY RANGE	PRODUCT NUMBER	WIRING/ SOCKET●
ON DELAY	120V AC/DC	0.1-10 Sec. 1-180 Sec. 3-300 Sec.	SS-40222-05 SS-40222-10 SS-40222-12	.187" Quick Connect 70171-D
	24V AC/DC	0.1-10 Sec. 1-180 Sec. 3-300 Sec.	SS-40228-05 SS-40228-10 SS-40228-12	A B IOC: - INPUT - IDC: LI VOLTAGE DIAGRAM 25
OFF DELAY	120V AC/DC	0.1-10 Sec. 1-180 Sec. 3-300 Sec.	SS-41622-05 SS-41622-10 SS-41622-12	.187" Quick Connect 70171-D
	24V AC/DC	0.1-10 Sec. 1-180 Sec. 3-300 Sec.	SS-41628-05 SS-41628-10 SS-41628-12	DIAGRAM 26

See Pages 52 & 53 for definitions & explanations of Timing Functions.

See Pages 81 & 82 for Sockets & Accessories

For Fixed Time Delay, add letter "F" and time delay desired to basic Product Number, i.e., SS-40222-F5S, is an On Delay with time delay fixed at 5 seconds.

APPLICATION DATA

Voltage Tolerance: AC Operation: +10/-15% of nominal at 50/60 Hz. Timing sequence must be initiated only DC Operation: +10/-15% of nominal.

Load (Burden):

Less than 3 VA.

Setting Accuracy:

Maximum Setting: +10%, -0% Minimum Setting: +0%, -50% Fixed Time Delay: > 2 Seconds +2% 0.1 - 2 Seconds <u>+</u>5%

Repeat Accuracy:

> 2 Seconds Delay <u>+</u>2% 0.1 - 2 Seconds Delay +5%

Compatibility:

Do not use a solid state switch to initiate the timing sequence-problems with leakage current could occur. Contact Macromatic Controls for additional information.

Recycle Time: 0.1 Seconds

Temperature: -28° to 65°C (-20° to 150°F) 1/09

Triggering Off Delay Timers:

after input power is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

Transient Protection:

10,000 volts for 20 microseconds

Output Contacts:

DPDT 12A @ 240V AC/30V DC, 1/2HP @ 240V AC

Life:

Mechanical: 10,000,000 operations Full Load: 30,000 operations

Approvals:



- Industry-standard .187" quick connect terminals
- On Delay or Off Delay timing functions
- 3 separate timing ranges up to 300 seconds
- 12A DPDT output contacts
- CE GP. with appropriate LISTED socket



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TIME RANGER™ DIGITAL-SET PROGRAMMABLE MULTI-RANGE PLUG-IN





Multi-Function

Single-Function

The TD-7 series of time delay relays offer an easy and accurate way to select any time delay between 50ms & 999 hours. Programming is accomplished by using a pushbutton thumbwheel to select one of seven built-in time ranges and three pushbutton thumbwheels to digitally set the time delay required. This method provides a greater setting accuracy than is found on other units with an analog potentiometer. An LED indicates timing mode and time out condition.

The TD-7 series comes in two versions: a single function product or a multi-function product. The TD-781 multi-function unit has a fifth pushbutton thumbwheel to select one of five built-in functions.

Multi-Function Product PRODUCT INPUT WIRING/ FUNCTION ■ VOLTAGE NUMBER SOCKETS MULTI-FUNCTION 120V AC/DC TD-78122 11 PIN OCTAL (5 Field-Selectable 12V AC/DC TD-78126 70170-D 24V AC/DC TD-78128 Functions in one unit) CONTROL On Delay 240V AC TD-78121 Off Delay ٠ Interval On Single Shot Flasher DIAGRAM 121

Single Function Products			
	INPUT	PRODUCT	WIRING/
FUNCTION ■	VOLTAGE	NUMBER	SOCKETS
ON DELAY	120V AC/DC	TD-70222	
	12V AC/DC	TD-70226	8 PIN OCTAL
	24V AC/DC	TD-70228	70169-D
	240V AC	TD-70221	
INTERVAL ON	120V AC/DC	TD-70522	45
	12V AC/DC	TD-70526	
	24V AC/DC	TD-70528	118/
	240V AC	TD-70521	
FLASHER	120V AC/DC	TD-70822	INPUT VOLTAGE
	12V AC/DC	TD-70826	
	24V AC/DC	TD-70828	DIAGRAM 1
	240V AC	TD-70821	
OFF DELAY	120V AC/DC	TD-71622	11 PIN OCTAL
	12V AC/DC	TD-71626	70170-D
	24V AC/DC	ID-71628	
	240V AC	TD-71621	
SINGLE SHOT	120V AC/DC	TD-71522	
	12V AC/DC	ID-71526	
	24V AC/DC	TD 71528	
	240V AC	10-71521	
			WPUT VOLTAGE
			DIAGRAM 2

See Pages 52 & 53 for definitions & explanations of Timing Functions.
See Pages 52 & 53 for definitions & explanations of Timing Functions.

Sockets & Accessories–Pages 81 & 82 Application Data & Dimensions–Page 69

- Available in either Single-Function or Multi-Function versions (with five userselectable modes)
- Pushbutton Thumbwheels for digital set of time delay & function (TD-781 series only)
- 50ms 999 hour programmable time range
- Uses industry-standard 8 or 11 pin octal sockets
- 10A DPDT output contacts
- LED indicates timing mode and time out conditions

<i>41</i>	€	Œ
ա)usted	with appropriate
	Carca	socket



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TIME RANGER[™] DIGITAL-SET **PROGRAMMABLE MULTI-RANGE PLUG-IN APPLICATION DATA & DIMENSIONS**

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden):

3 VA

Setting Accuracy:

+1% of set time or +50ms, whichever is greater.

Repeat Accuracy (constant voltage and temperature): +0.1% of set time or +0.02 seconds, whichever is greater.

Reset Time:

On Delay/Interval/Flasher: 0.1 Seconds Off Delay/Single Shot: 0.04 Seconds

Start-up Time:

(Time from when power is applied until unit is timing) 120 & 240V units 0.05 Seconds 12, 24 & 48V units 0.08 Seconds

Maintain Function Time:

(Time unit continues to time after power is removed) 0.01 Seconds for all units

Temperature:

12-120V Input Voltage: -28° to 65°C (-18° to 150°F) 240V Input Voltage: -28° to 50°C (-18° to 122°F)

Insulation Voltage:

2.000 volts

Output Contacts:

DPDT 10A @ 240V AC/30V DC, 1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.) B300 & R300; AC15 & DC13

Life:

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

Compatibility:

Do not use a solid state switch to initiate the timing sequenceproblems with leakage current could occur. Contact Macromatic Controls for additional information.

Triggering Off Delay or Single Shot Units:

SE

Timing sequence must be initiated only after input voltage is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

LED:

Flasher Mode: Flashes during "ON" time; continuous on during "OFF" time

All Other Modes: Flashes during timing; continuous on after time out.

Approvals:





EMC Directives

EN60947-1, EN60947-5-1



appropriate socket File #E109466





TD-8 SERIES DIP-SWITCH DIGITAL-SET PLUG-IN

MULTI-FUNCTION PROGRAMMABLE



The TD-881 Series offers the digital-set accuracy of DIP-switch setting as well as the flexible programmability of a multi-function & multi-time range relay. These products provide an easy & accurate method to select any of 16 time delay functions and any time delay between 100ms and 1,023 hours. Programming is accomplished through the use of two 10-position DIP-switches. This product can literally replace hundreds of different catalog numbers, thereby reducing inventory requirements.



The following functions are available (see Page 73 for definitions & explanations):

Single Mode

- On Delay
- Flasher (OFF 1st)
- ♦ Off Delay
- Watchdog
- Triggered On Delay
- Interval On
 Flasher (ON 1st)
- ♦ Single Shot
- ◆ Single Shot (Trailing Edge)

Dual Mode

- Repeat Cycle (OFF 1st)
- Delayed Interval
- On Delay/Off Delay
- On Delay/Flasher
- ♦ Repeat Cycle (ON 1st)
- ◆ Triggered Delayed Interval
- ♦ Single Shot-Flasher

See Page 72 for instructions on how to program functions & time delay.

FUNCTION	INPUT	PRODUCT	WIRING/
	VOLTAGE	NUMBER	SOCKETS
MULTI-FUNCTION (16 Field-Selectable Functions in one unit)	120V AC/DC 12V AC/DC 24V AC/DC 240V AC	TD-88122 TD-88126 TD-88128 TD-88121	11 PIN OCTAL 70170-D CONTROL SWITCH

See Page 73 for definitions & explanations of Timing Functions.

Application Data & Dimensions-Page 72



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800-238-7474



- DIP-Switches for accurate digital set of time delay & selection of function
- 100ms 1,023 hours programmable time delay
- Uses industry-standard 11 pin octal socket



with appropriate socket

TD-8 SERIES DIP-SWITCH DIGITAL-SET PLUG-IN

SINGLE FUNCTION PROGRAMMABLE



The TD-8 Series time delay relays offer an easy & accurate method to select any time delay between 100ms & 1,023 minutes. 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 & adding their corresponding values (see examples below). This method provides a greater setting accuracy than is found on other units with an analog potentiometer. An LED indicates relay status.

FUNCTION	INPUT	PRODUCT	
SEE PAGE 73 FOR DEFINITIONS OF TIMING FUNCTIONS	VOLIAGE 50/60Hz.	COMPLETE PRODUCT NUMBER USING 2 DIGIT CODE FROM TABLE BELOW	WIRING/ SOCKETS
ON DELAY	120V AC/DC	TD-80222-**	
	12V AC/DC	TD-80226-**	
	24V AC/DC	TD-80228-**	8 PIN OCTAL
	240V AC	TD-80221-**	70169-D
INTERVAL ON	120V AC/DC	TD-80522-**	
	12V AC/DC	TD-80526-**	
	24V AC/DC	TD-80528-**	
	240V AC	TD-80521-**	$\begin{pmatrix} -3 \\ -2 \end{pmatrix} \oplus \begin{pmatrix} 6 \\ 7 \end{pmatrix}$
REPEAT CYCLE *	120V AC/DC	TD-83122-**	1181
(OFF Time First Followed	12V AC/DC	TD-83126-**	
By ON Time	24V AC/DC	TD-83128-**	INPUT VOLTAGE
and Repeating)	240V AC	TD-83121-**	
REPEAT CYCLE *	120V AC/DC	TD-85122-**	
(ON Time First Followed	12V AC/DC	TD-85126-**	
By OFF Time	24V AC/DC	TD-85128-**	
and Repeating)	240V AC	TD-85121-**	
OFF DELAY	120V AC/DC	TD-81622-**	11 PIN OCTAL
Control Switch Trigger	12V AC/DC	TD-81626-**	70170-D
	24V AC/DC	TD-81628-**	CONTROL SWITCH
	240V AC	TD-81621-**	
SINGLE SHOT	120V AC/DC	TD-81522-**	
Control Switch Trigger	12V AC/DC	TD-81526-**	
	24V AC/DC	TD-81528-**	N. A
	240V AC	TD-81521-**	(DC)+ J (DC)- L1 J L2
			K-PUT VOLTAGE

* ON & OFF Time Ranges are the same. For different ON & OFF time ranges, contact Macromatic.

Application Data & Dimensions–Page 72

TIMING RANGES



MACROMATIC

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- DIP-Switches for accurate digital set of time delay
- 100ms 1,023 minute programmable time delay
- Uses industry-standard 8 or 11 pin octal sockets
- 10A DPDT output contacts
- LED indicates relay status



appropriate

1/09

TD-8 SERIES DIP-SWITCH DIGITAL-SET PLUG-IN APPLICATION DATA & DIMENSIONS FOR MULTI- & SINGLE-FUNCTION PRODUCTS

PROGRAMMING FUNCTION & TIME DELAY (TD-881 Series Multi-Function Only)

Programming is accomplished through the use of two 10-position DIP-switches (see drawings at right). Switches A-D of the left-mounted DIP-switch are used to select a function (see the descriptions of how each function operates on Page 73 as a guide). Switches E-K of the same DIP-switch are used to select the time base. A convenient chart is on the side of the relay to clearly illustrate how to set both the function & time base.



The right-mounted 10-position DIP-switch is used to select the time delay within the time base selected with switches E-K from the first DIP-switch. Each position on the second DIP-switch is marked with a

binary time increment. The required delay is selected by moving the switch of each increment to the ON position & adding their corresponding values (see diagram at right). Note that dual mode products can either have the same or different ON & OFF times.

APPLICATION DATA

Voltage Tolerance:

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

Load (Burden): 2 VA

Setting Accuracy:

+1% of set time or +50ms, whichever is greater.

<u>Repeat Accuracy</u> (constant voltage and temperature): +0.1% of set time or +0.02 seconds, whichever is greater.

Reset Time:

All Functions Triggered by a Control Switch: 0.04 Seconds All Other Functions: 0.1 Seconds

Start-up Time:

DIMENSIONS

(Time from when power is applied until unit is timing)120 & 240V units0.05 Seconds12, 24 & 48V units0.08 Seconds

Maintain Function Time:

(Time unit continues to time after power is removed) 0.01 Seconds for all units

Insulation Voltage: 2,000 volts

Temperature: -28° to 65°C (-18° to 150°F)

Output Contacts:

DPDT 10A @ 240V AC/30V DC, 1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120V AC (N.C.) B300 & R300; AC15 & DC13

Life:

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

Compatibility:

Do not use a solid state switch to initiate the timing sequenceproblems with leakage current could occur. Contact Macromatic Controls for additional information.

Control Switch Triggered Units:

File #F109466

Minimum required trigger switch closure time is 0.02 seconds.

<u>Approvals</u>:



with appropriate socket File #E109466



TD-8 SERIES DIP-SWITCH DIGITAL-SET PLUG-IN

DEFINITION OF TIMING FUNCTIONS



TAD SERIES DIGITAL-SET MULTI-FUNCTION MULTI-RANGE 1/16 DIN MOUNTING

All dimensions are IN (mm)

(15)

1.8 (45)



- Push-button thumbwheels for digital-setting of time delay & selection of function
- 10 field-selectable functions in one unit
- 10ms to 9,990 Hours programmable timing range
- Universal 24-240V AC/DC input voltage
- LCD display
- Panel, track or surface mounting
- 1/16 DIN style case (comes with panel-mounting adapter)
- ◆ 5A SPDT output contacts



MULTI-	INPUT	PRODUCT	WIRING/
FUNCTION	VOLTAGE	NUMBER	SOCKETS∎
10 FIELD- SELECTABLE FUNCTIONS♦	24-240V AC 50/60Hz & 24-240V DC	TAD1U	SEE DIAGRAMS ON PAGE 75 8 Pin Octal (See Below)

- Functions Include: On Delay (2 Versions), Interval, Flasher (2 Versions), Delayed Interval/Pulse, Off Delay, On/Off Delay, Single Shot & Accumulative On Delay (see Page 75 for additional details)
- See below for **Sockets & Accessories**.

APPLICATION DATA

Voltage Tolerance: +10% of rated voltage

Load (Burden): Less than 2.5 VA

Repeat Accuracy:

 \pm 0.01%, \pm 0.05 seconds (includes variation due to voltage and temperature changes)

Recycle Time: 0.2 seconds maximum

Temperature:

-10° to 55°C (14° to 131°F)

LCD Display: Shows time remaining in both digit & bar graph form--also shows relay status & time base. In addition, a switch on the bottom of the unit allows choice of timing up or timing down display.

Output Contacts:

5A SPDT Resistive @ 250V AC

Life:

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

File #E170213

LUS

Approvals:



SOCKETS & ACCESSORIES

	PRODUCT
DESCRIPTION	: NUMBER
8 Pin Octal Socket	[∶] 70169-D∎
8 Pin Octal Socket (Back Mounting)	SR6P-M08G
Panel-Mounting Adaptor	Included

For Surface or Track Mounting--See Pages 81 & 82 for additional information







MACROMATIC

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TAD SERIES DIGITAL-SET MULTI-FUNCTION MULTI-RANGE

DEFINITION OF TIMING FUNCTIONS



In addition to using the Trigger or Control Switch, some functions may also use a Reset and/or Inhibit switch--please contact Macromatic for additional information.



DIAGRAM 171

STARI

TAA SERIES **ANALOG-SET MULTI-FUNCTION MULTI-RANGE** 1/16 DIN MOUNTING

All dimensions are IN (mm)





- 6 field-selectable functions in one unit
- Large dial for setting of time delav
- 50ms to 100 Hours programmable timing range
- Universal 24-240V AC/DC input voltage
- Panel, track or surface mounting
- ◆ 1/16 DIN style case (comes with panel-mounting adapter)
- 3A DPDT output contacts



MULTI- FUNCTION✦	INPUT VOLTAGE	PRODUCT NUMBER	WIRING/ SOCKETS∎
Includes: On Delay, Delayed Interval/Pulse, On Delay-Timed & Instantaneous, Flasher (OFF 1st), Flasher (ON 1st) & Interval On-Timed & Instantaneous	24-240V AC 50/60Hz & 24-240V DC	TAA1U	SEE DIAGRAMS ON PAGE 77 8 Pin Octal (See Below)
Includes: On Delay- Triggered, Off Delay, On/Off Delay, Flasher (OFF 1st)- Triggered, Flasher (ON 1st)- Triggered & Watchdog	24-240V AC 50/60Hz & 24-240V DC	TAA2U	SEE DIAGRAMS ON PAGE 77 11 Pin Octal (See Below)

- See below for Sockets & Accessories.
- See Page 77 for additional details.

APPLICATION DATA

Voltage Tolerance: +10% of rated voltage.

Load (Burden): Less than 2.5 VA

Repeat Accuracy:

+0.01%, +0.05 seconds (includes variation due to voltage and temperature changes).

Recycle Time:

0.2 seconds maximum.

Temperature: -10° to 55°C (14° to 131°F)

SOCKETS & ACCESSORIES

LED Indicators: One red LED indicates Input Voltage/Timing (flashing) & a second red LED indicates relay status.

Output Contacts:

3A DPDT Resistive @ 250V AC

Life:

PRODUCT

Mechanical: 10.000.000 operations Full Load: 100,000 operations

Approvals: File #E170213





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SR6P-M11G





TAA SERIES ANALOG-SET MULTI-FUNCTION MULTI-RANGE

DEFINITION OF TIMING FUNCTIONS

TAA1U

(A) ON DELAYWiring Diagram 1	(F) FLASHER (OFF 1ST)Wiring Diagram 1
INPUT ON POWER (VOLTAGE) OFF OUTPUT ON (LOAD) OFF	INPUT ON Reset POWER IS REMOVED
(A1) DELAYED INTERVAL/PULSE-Wiring Diagram 28	(F1) FLASHER (ON 1ST)Wiring Diagram 1
(B) ON DELAYED TIMED & INSTANTANEOUS Wiring Diagram 28	(I) INTERVAL ONTIMED & INSTANTANOUSWiring Diagram 28
OUTPUT ON ←DELAY →	OUTPUT ON + DEU/Y +

TAA2U

(A) ON DELAY-TRIGGEREDWiring Diagram 13 **	(F) FLASHER (OFF 1ST)Wiring Diagram 177
INPUT ON Resot POWER (VOLTAGE) OFF TRIGGER CLOSED SIGNAL OPEN OUTPUT (LOAD) OFF + DELAY + + < DELAY +	INPUT ON POWER (VOLTAGE) OFF OUTPUT (LOAD) OFF ACTION CONTINUES UNTIL POWER IS REMOVED
(C) OFF DELAYWiring Diagram 13	(F1) FLASHER (ON 1ST)Wiring Diagram 177
	NPUT ON POWER (VOLTAGE)OFF (VOLTAGE)OFF OUTPUT (LOAD) OFF T1 T1 T1 T1 OFF ACTION CONTINUES UNTIL POWER IS REMOVED
(D) ON/OFF DELAYWiring Diagram 13	(I) WATCHDOGWiring Diagram 13
INPUT ON Reset POWER (VOLTAGE) OFF TRIGGER CLOSED SIGNAL OPEN OUTPUT ON (LOAD) OFF TD1+ TD1+ TD1+	INPUT ON POWER (VOLTAGE) OFF TRIGGER SIGNAL OPEN RELAY OUTPUT (LOAD) OFF -DELAY+ -DELAY+

In addition to using the Trigger or Control Switch, some functions may also use a Reset and/or Inhibit switch--please contact Macromatic for additional information. ** Function (A) will also operate as standard Non-Triggered On Delay when using Wiring Diagram 177.



TE-881 SERIES PROGRAMMABLE MULTI-FUNCTION MULTI-RANGE 17.5MM MODULAR ENCLOSURE



- 10 field-selectable functions in one unit
- Universal input voltage-works on 12-240V AC/DC
- 0.1 second 10 days programmable time delay
- LED's indicates output relay status & timing mode
- Compact 17.5mm enclosure
 mounts on 35mm DIN track
- 16A SPDT output contacts



The TE-8816U time delay relay offers 10 timing functions and a universal voltage input (12-240VAC/DC) with a programmable time range from 0.1 second – 10 days. It has 16A SPDT output contacts. A green LED indicates input voltage applied; a red LED blinks during timing & is steady when the output relay is energized. It has a compact 17.5mm enclosure which snaps on to 35mm DIN track. This saves space & installation time, which saves money. With all this flexibility, the TE-8816U truly does replace hundreds of separate time delay relays.

Catalog Number	TE-8816U	
Input		
Voltage Range	12-240V AC/DC, 50/60Hz	
Operating Range	+10%, -15%	
Burden	3VA (AC), 1.7W (DC)	
Timing		
Number of Functions	10 (see descriptions on Page 79)	
Time Range	0.1 second-10 days (8 different time ranges built-in)	
Repeat Accuracy	+0.2%	
Reset Time	150ms	
Trigger Pulse Length	50ms	
Output		
Configuration	SPDT	
Rating	16A @ 240V AC, 16A @ 24V DC 1HP @ 240V AC, 1/2HP @ 120V AC, B300	
Contact Material	Silver Alloy	
Life	10 million operations mechanical; 100, 000 electrical	
Other	-	
Agency Approval		
Temperature	Operating: -20° to 55° C (-4° to 131° F)	
LED Indication	Green-Input Voltage; Red-Timing or Relay ON	
Terminations	14 AWG (2.1mm ²)	



Application Data & Dimensions-Page 79

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TIME DELAY RELAYS TE-881 SERIES PROGRAMMABLE MULTI-FUNCTION MULTI-RANGE

APPLICATION DATA & DIMENSIONS

FUNCTIONS

FUNCTION	DIAL SETTING	GRAPH
ON DELAY	A	
INTERVAL ON	В	U t <t t<="" td=""></t>
FLASHER (OFF 1ST)	С	U t t t t t t
FLASHER (ON 1ST)	D	U t t t t t t
OFF DELAY	E	S t t
SINGLE SHOT	F	S t t
OFF DELAY TRAILING EDGE Non-Retriggerable)	G	S t t
ON DELAY/ OFF DELAY	н	S t t t t
LATCHING RELAY	I	S
PULSE GENERATOR (PULSE=0.5 SEC)	J	U t PULSE t PULSE

DIMENSIONS





CONNECTION DIAGRAM



1/09