











# TIME DELAY RELAYS

## 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 & solid state outputs for high duty cycle applications. Time delay relays are available as plug-in units for use with industry standard 8 & 11 pin octal sockets. They also come in 2" x 2" encapsulated & 1/16 DIN mounting configurations. Choose between analog or digital-set time delay relays. Refer to the Selection Table on this page for more information.

Product Series		Mounting Configuration	Time Delay Setting & Ranges	Functions	Input Voltages	Output	See Pages
	<b>THR Series Relay Output</b>	2" x 2" Encapsulated Panel Mounted with One Screw	Analog-Set 0.1 SEC - 100 HR	Single- Function	12VDC, 24VAC/DC, 120VAC/DC, 240VAC	10A SPDT Relay	43-49
	<b>THS Series Solid State Output</b>		Analog-Set 0.01 SEC - 100 HR	Single- Function	24-240VAC, 12-48VDC	1A SPNO Solid State	50-53
	<b>THL Series Solid State Inline (Series) Output</b>		Analog-Set 0.01 SEC - 100 HR	Single- Function	240-240VAC & 12-48VDC	1A SPNO Solid State	54-55
	<b>TR-5 Series Standard</b>	Plug-in Utilizing Industry-Standard 8 & 11 Pin Sockets	Analog-Set 0.05 SEC - 2 HR	Single- Function	12VDC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	56-59 60-61
	<b>TR-6 Series Time Ranger Programmable</b>		Analog-Set Multi-Range 0.1 SEC - 24 HR	Single- Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT Relay	62-65
	<b>TD-8 Series Time Ranger Digital-Set Programmable</b>		Digital-Set Multi-Range 0.1 SEC - 1,023 HR	Multi-Function (16) & Single- Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	66-68
	<b>TD-7 Series Time Ranger Digital-Set Programmable</b>		Digital-Set Multi-Range 0.05 SEC - 999 HR	Multi-Function (10) & Single- Function	12VAC/DC, 24VAC/DC, 120VAC/DC, 240VAC	10A DPDT 10A SPDT Relay	69-71
	<b>SS-6 &amp; SS-8 Series Compact</b>		Analog-Set 0.2 - 300 SEC	Single- Function	12VDC, 24VAC/DC, 120VAC	5A SPDT Relay	76
	<b>TAD Series Digital-Set 1/16 DIN</b>	1/16 DIN (48mm <sup>2</sup> )	Digital-Set Multi-Range 0.01 SEC - 9,990 HR	Multi-Function (10)	24-240VAC & 24-240VDC	5A DPDT Relay	72-73
	<b>TAA Series Analog-Set 1/16 DIN</b>		Digital-Set Multi-Range 0.05 SEC - 100 HR	Multi-Function (6)-2 Versions	100-240VAC & 24-240VDC	3A DPDT & SPDT Relay	74-75

# TIME DELAY RELAYS

## TAD SERIES

### DIGITAL-SET MULTI-FUNCTION MULTI-RANGE

### 1/16 DIN MOUNTING



- ◆ 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



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MULTI-FUNCTION	INPUT VOLTAGE	PRODUCT NUMBER	WIRING/SOCKETS ■
10 FIELD-SELECTABLE FUNCTIONS◆	24-240V AC 50/60Hz & 24-240V DC	TAD1U  8 Pin Octal	SEE DIAGRAMS ON PAGE 73  (See Below)

- ◆ Functions Include: On Delay (2 Versions), Interval, Flicker [Flasher] (2 Versions), One Shot Out Flicker [Delayed Interval/Pulse], Off Delay, On/Off Delay, Interval Delay [Single Shot] & Integration Time [Accumulative On Delay] (see Page 73 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:**  
±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)

**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

**Approvals:**



#### SOCKETS & ACCESSORIES

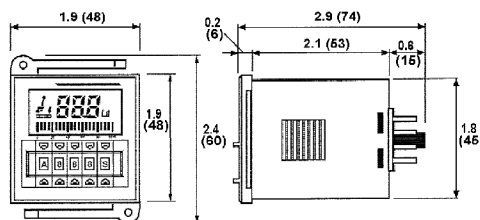
DESCRIPTION	PRODUCT NUMBER
8 Pin Octal Socket	70169-D■
8 Pin Octal Socket (Back Mounting)	SR6P-M08G
Panel-Mounting Adaptor	Included

- For Surface or Track Mounting--See Page 80 for additional information



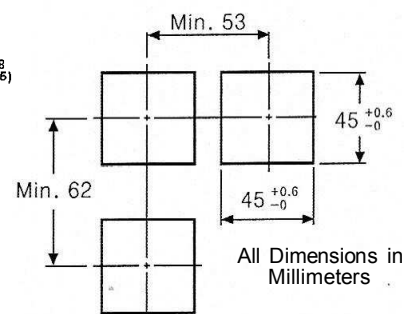
**SR6P-M08G**

#### DIMENSIONS



All dimensions are  
IN (mm)

#### PANEL CUTOUT



# TIME DELAY RELAYS

## TAD SERIES DIGITAL-SET MULTI-FUNCTION MULTI-RANGE

### DEFINITION OF TIMING FUNCTIONS

#### Functions for TAD1U

<p><b>Mode</b></p> <p><b>ON Delay</b> (A)</p> <ol style="list-style-type: none"> <li>Time progresses when START signal is ON.</li> <li>The output will be ON when the setting value is equal to the display value. (Position ①)</li> <li>When the RESET signal is ON, the display value is returned to the initial state. (Position ②)</li> <li>When the setting value is equal to the display value, if START signal is OFF, the output turns off, the display value is held. (Position ③)</li> </ol> <p>※ If START signal is OFF when the output is OFF the display value is returned to initial state (Position ④).</p>	<p><b>Mode</b></p> <p><b>One-shot Out Flicker</b></p> <p>0.3s One-shot output</p> <ol style="list-style-type: none"> <li>Time progresses from initial value to the preset value repeatedly and the output operates as one-shot (0.3 sec), when the START signal is ON. (Position ①)</li> <li>If the RESET signal is ON, it is returned to initial state. (Position ②)</li> </ol> <p>※ When START signal is applied repeatedly, only the initial signal is recognized. (Position ③)</p>
<p><b>Interval Delay</b> (A)</p> <ol style="list-style-type: none"> <li>The output turns ON and time progresses when START signal is ON.</li> <li>The output will be ON when the setting value is equal to the display value. (Position ①)</li> <li>When the RESET signal is ON, the display value is returned to the initial state. (Position ②)</li> <li>When the setting value is equal to the display value, if START signal is OFF, the output turns off, the display value is held. (Position ③)</li> </ol> <p>※ If START signal is OFF when the output is OFF the display value is returned to initial state. (Position ④)</p>	<p><b>Mode</b></p> <p><b>OFF Delay</b></p> <ol style="list-style-type: none"> <li>The START signal &amp; the output are ON at the same time. The output will return and the display value is held after the setting time.</li> <li>If the RESET signal is ON, the display value is returned to initial state.</li> </ol> <p>※ If the START signal is applied continuously, the output will be ON but time is not progressed.</p>
<p><b>ON Delay</b> (B)</p> <ol style="list-style-type: none"> <li>Time proceeds when START signal is ON.</li> <li>The output will be ON when the setting value is equal to the display value. (Position ①)</li> <li>When the RESET signal is ON, the display value is returned to the initial state.</li> </ol> <p>※ When start signal is applied repeatedly (Position ①), only the initial signal is recognized.</p> <p>※ Even if the START signal is not applied, time progresses. (Position ②)</p>	<p><b>Mode</b></p> <p><b>ON/OFF Delay</b></p> <ol style="list-style-type: none"> <li>When the START signal is ON the output is ON the output will be reset and display value is held when setting value is equal to display value.</li> <li>The START signal turns OFF, the output turns ON, the output will be reset and display value is held when setting value is equal to display value.</li> <li>If RESET signal is ON, it is returned to initial state.</li> </ol> <p>※ If START signal is applied repeatedly, output keeps ON but be sure that the time will be initialized.</p>
<p><b>Flicker</b> (A)</p> <ol style="list-style-type: none"> <li>Time progresses repeatedly when the START signal is ON.</li> <li>The output operates from NC to NO, and from NO to NC repeatedly.</li> <li>If RESET signal is ON, it is returned to initial state. (Position ②)</li> </ol> <p>※ If the START signal is OFF, the display value and output is returned to initial state. (Position ③)</p>	<p><b>Interval Delay</b> (B)</p> <ol style="list-style-type: none"> <li>When START signal is ON, the output turns ON and the time progresses at the same time.</li> <li>When the time reaches at the preset value the output will be reset, and the display value is held.</li> <li>If RESET signal is applied, the display value is returned to initial state.</li> </ol> <p>※ When START signal is applied repeatedly, only the initial signal is recognized. (Position ①)</p>
<p><b>Flicker</b> (B)</p> <ol style="list-style-type: none"> <li>Time progresses repeatedly when the START signal is ON.</li> <li>The output operates from NC to NO, and from NO to NC repeatedly.</li> <li>If RESET signal is ON, it is returned to initial state. (Position ③)</li> </ol> <p>※ When START signal is applied repeatedly, only the initial signal is recognized. (Position ①)</p> <p>※ Even if the START signal is not applied, time progresses. (Position ②)</p>	<p><b>Integration Time</b></p> <ol style="list-style-type: none"> <li>When START signal is ON, time progresses.</li> <li>If START signal turns off before the display value reaches the setting value, the time (display value) will be held.</li> <li>If RESET signal is ON, it is returned to initial state.</li> </ol>

NOTE: Timing is paused when the INHIBIT signal is ON during a timing cycle and resumes when it is OFF.

#### TAD1U All Functions

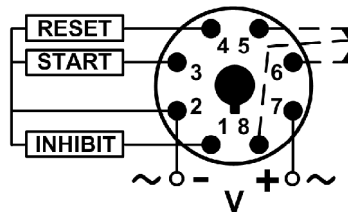


DIAGRAM 171

# TIME DELAY RELAYS

## TAA SERIES

### ANALOG-SET MULTI-FUNCTION MULTI-RANGE

### 1/16 DIN MOUNTING



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



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MULTI-FUNCTION ◆	INPUT VOLTAGE	PRODUCT NUMBER	WIRING/ SOCKETS ■
Includes Six (6) Functions Built-in (See Page 75 for additional information)	100-240V AC 50/60Hz & 24-240V DC	TAA1U	<b>SEE DIAGRAMS ON PAGE 75</b> 8 Pin Octal (See Below)
Includes Six (6) Functions Built-in (See Page 75 for additional information)	100-240V AC 50/60Hz & 24-240V DC	TAA2U	<b>SEE DIAGRAMS ON PAGE 75</b> 11 Pin Octal (See Below)

◆ See Page 75 for additional details on Functions.

■ See below for **Sockets & Accessories**.

#### 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)

**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:**

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

**Approvals:**



#### SOCKETS & ACCESSORIES

DESCRIPTION	PRODUCT NUMBER
8 Pin Octal Socket	70169-D■
8 Pin Octal Socket (Back Mounting)	SR6P-M08G
11 Pin Octal Socket	70170-D■
11 Pin Octal Socket (Back Mounting)	SR6P-M11G
Panel-Mounting Adaptor	Included

■ For Surface or Track Mounting--See Page 80 for additional information

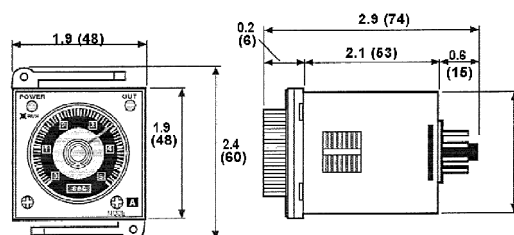


**SR6P-M08G**



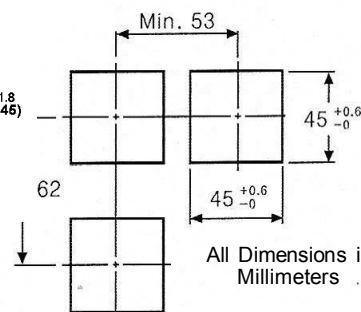
**SR6P-M11G**

#### DIMENSIONS



All dimensions are  
IN (mm)

#### PANEL CUTOUT



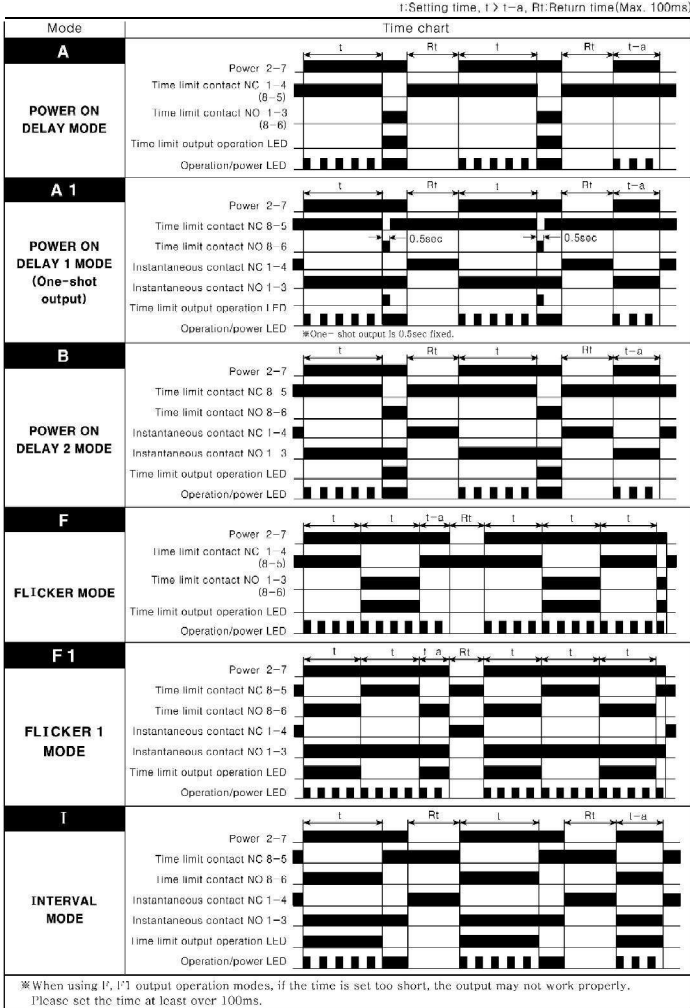
All Dimensions in  
Millimeters

# TIME DELAY RELAYS

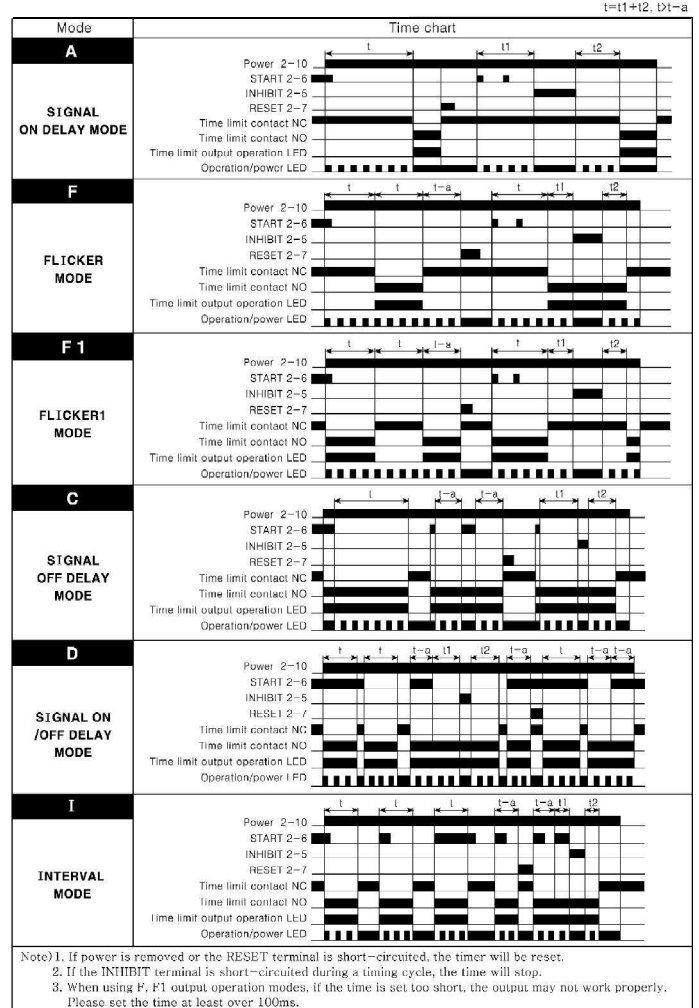
## TAA SERIES ANALOG-SET MULTI-FUNCTION MULTI-RANGE

### DEFINITION OF TIMING FUNCTIONS

#### Functions for TAA1U



#### Functions for TAA2U



#### TAA1U Functions A, F

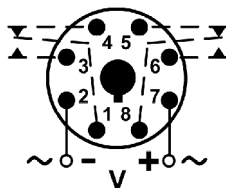


DIAGRAM 134

#### TAA1U Functions A1, B, F1 & I

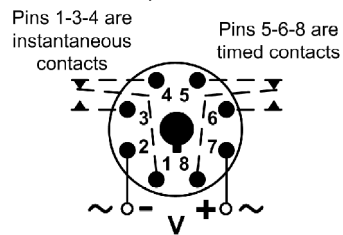


DIAGRAM 182

#### TAA2U All Functions

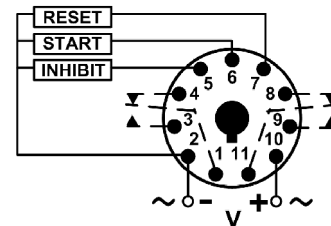


DIAGRAM 183