

# TEMPATRON

## TFDRMU Digital Multifunction Timer User Manual



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Please read this document carefully before using this product. The product guarantee will become invalidated by any damage to the timer caused by not following the instructions in the user manual. Tempatron do not accept any liability for personal injury, material damage or capital losses which may arise by not following the instructions in the user manual.

- 4 digit backlit LCD display digital timer
- 24 programmable timing modes
- 0-9999sec or 0-9999min time ranges
- 24 to 240Vac/dc powered
- 1 changeover and 1 N/O relay output
- Easy to programme through front keys
- Status and timing indicators
- EEPROM memory (minimum 10 years)
- IP20 enclosure code
- DIN rail mounting
- 2 module 36mm width
- Clear hinged tamperproof cover



## TECHNICAL SPECIFICATION

### ENVIRONMENTAL CONDITIONS

Operating/Storage Temperature: -5°C to +45°C / -10°C to +55°C  
 Protection Class: IP20  
 Installation Height: Maximum 2000m

Do not use this timer in locations where corrosive or flammable gases could be present.

### ELECTRICAL

Power Supply Voltage: 24 to 240Vac/dc  
 Power Consumption (Burden): <3VA  
 Frequency: 50/60Hz  
 Wiring: 2mm<sup>2</sup> screw type terminals  
 Data Retention: EEPROM (minimum 10 years)  
 CE Markings: EN 60947-5-1:2004+A1:2009, EN 60730-1:2012, EN 60730-2-7:2011+AC:2012, EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, EN 61000-3-2:2014, EN 61000-3-3:2013

### OUTPUTS

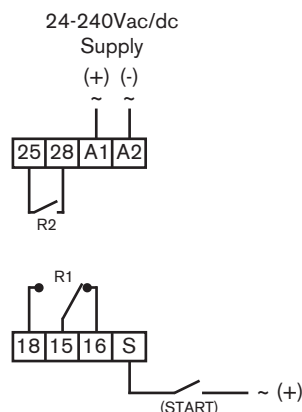
Relay Outputs (R1 & R2): R1: Single pole changeover contact 8A rated at 240Vac (resistive load)  
 R2: Single pole N/O contact 8A rated at 240Vac (resistive load)  
 Relay Contact Life: Mechanical 1,000,000 operations  
 Electrical 100,000 operations  
 Reset Time: 100ms approx.  
 Accuracy: ±3sec/24hours

### HOUSING

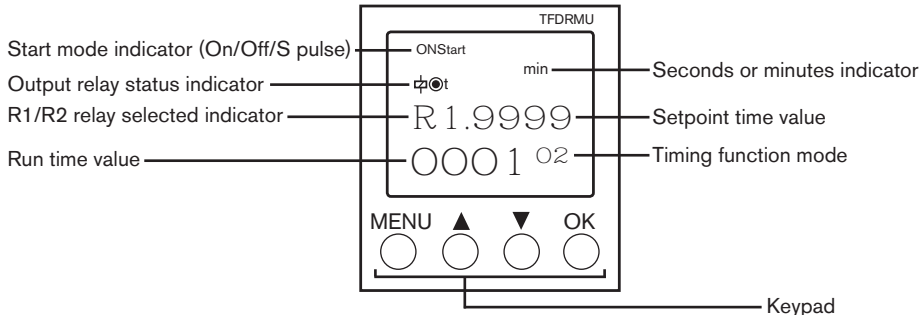
Housing Type: DIN rail mounting 2 module width  
 Display: Backlit LCD display  
 Dimensions: 36mm wide x 90mm high x 65mm deep  
 Weight: Approximately 140g (without packaging)  
 Enclosure Materials: Self extinguishing plastics

When cleaning the timer, solvents (thinners, gasoline, acid etc.) or corrosive materials must not be used.

### WIRING CONNECTIONS



# FRONT PANEL DISPLAY FUNCTIONS



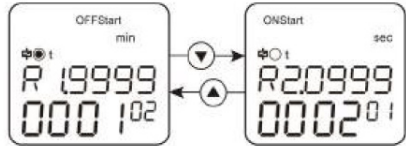
## DISPLAY SYMBOLS

- $\oplus \ominus$  **Output Relay ON**
- $\oplus \circ$  **Output Relay OFF**
- R 1 **Output Relay 1**
- R 2 **Output Relay 2**
- SET **Parameter Setting**
- ONStart **Starting with ON**
- OFFStart **Starting with OFF**
- $\lrcorner$  **Time Impulse release by rising edge**
- $\llcorner$  **Time Impulse release by falling edge**
- min **Set time in minutes**
- sec **Set time in seconds**
- T **Time Delay T**
- T1 **Time Delay T1**
- T2 **Time Delay T2**
- start **Starting with S pulse**

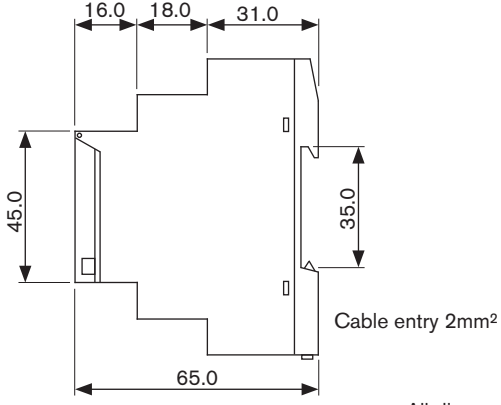
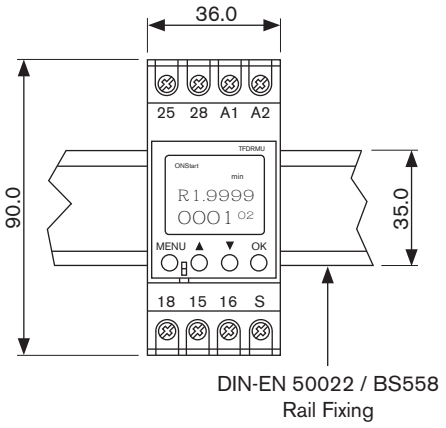
## KEYS

MENU	<ul style="list-style-type: none"> <li><math>\circ</math> Enter configuration menu</li> <li><math>\circ</math> Exit configuration menu</li> </ul>	OK	<ul style="list-style-type: none"> <li><math>\circ</math> Confirm settings</li> </ul>
$\blacktriangle$	<ul style="list-style-type: none"> <li><math>\circ</math> Select menu</li> <li><math>\circ</math> Digit +</li> <li><math>\circ</math> Display menu selection</li> </ul>	$\blacktriangledown$	<ul style="list-style-type: none"> <li><math>\circ</math> Select menu</li> <li><math>\circ</math> Digit -</li> <li><math>\circ</math> Display menu selection</li> </ul>

To check the status of R1/R2 output

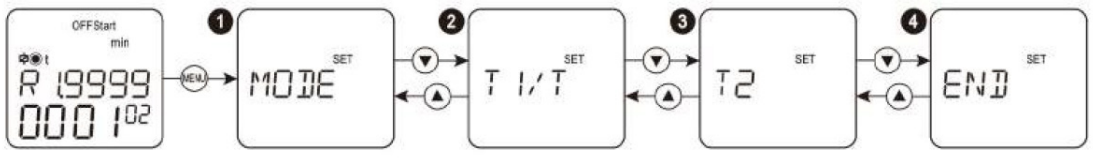


## DIMENSIONS



All dimensions in mm

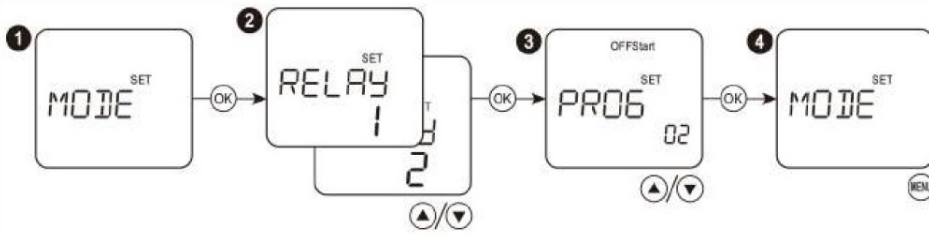
## MAIN MENU



1	MODE	Operating mode adjustment
2	T 1/T	T1/T time adjustment
3	T2	T2 time adjustment
4	END	End setting

- $\circ$  Press the MENU key to enter the timer configuration menu, SET will then appear on the display.
- $\circ$  Use the  $\blacktriangle$  and  $\blacktriangledown$  keys to choose the desired sub menu.
- $\circ$  If no key is pressed for 2 minutes the timer will return to the main menu.

## OPERATION MODE SETTING

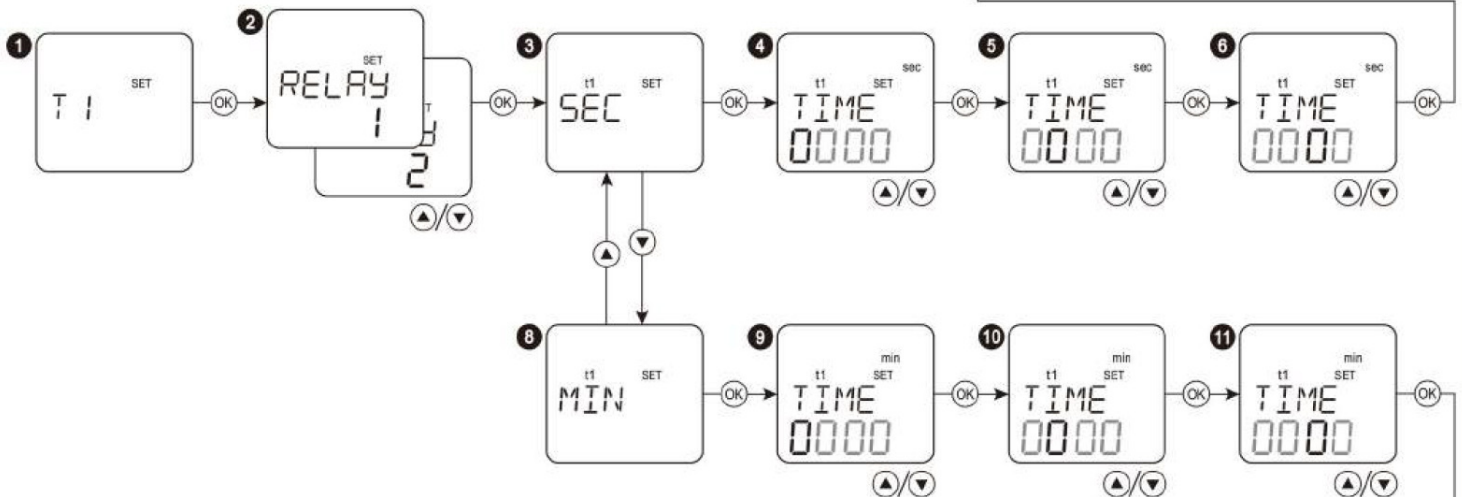
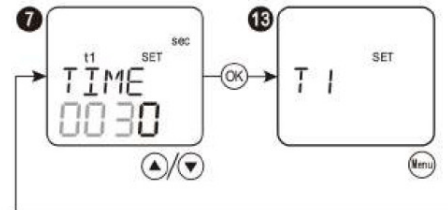


- 1 Select MODE and press the OK key.
- 2 Select output relay 1 or output relay 2 with the ▲▼ keys and press the OK key.
- 3 Choose the desired timing function mode (from 01 to 24, see pages 5-7 for the options) with the ▲▼ keys and press the OK key.
- 4 Return to the main menu by pressing the MENU key.

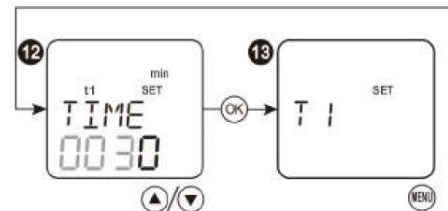
Note: Press ▲ for longer than 0.5s to increase the numerical value more quickly and press ▼ for longer than 0.5s to decrease the numerical value more quickly.

## T1/T TIME DELAY SETTING

- 1 Select the T1/T time setting menu and press the OK key.
- 2 Select output relay 1 or output relay 2 with the ▲▼ keys and press the OK key.
- 3 If a time in seconds (up to 9999 seconds) is required select SEC with the ▲▼ keys and press the OK key.
- 4 Choose the required thousands of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 5 Choose the required hundreds of seconds (0 to 9) with the ▲▼ keys and press the OK key.



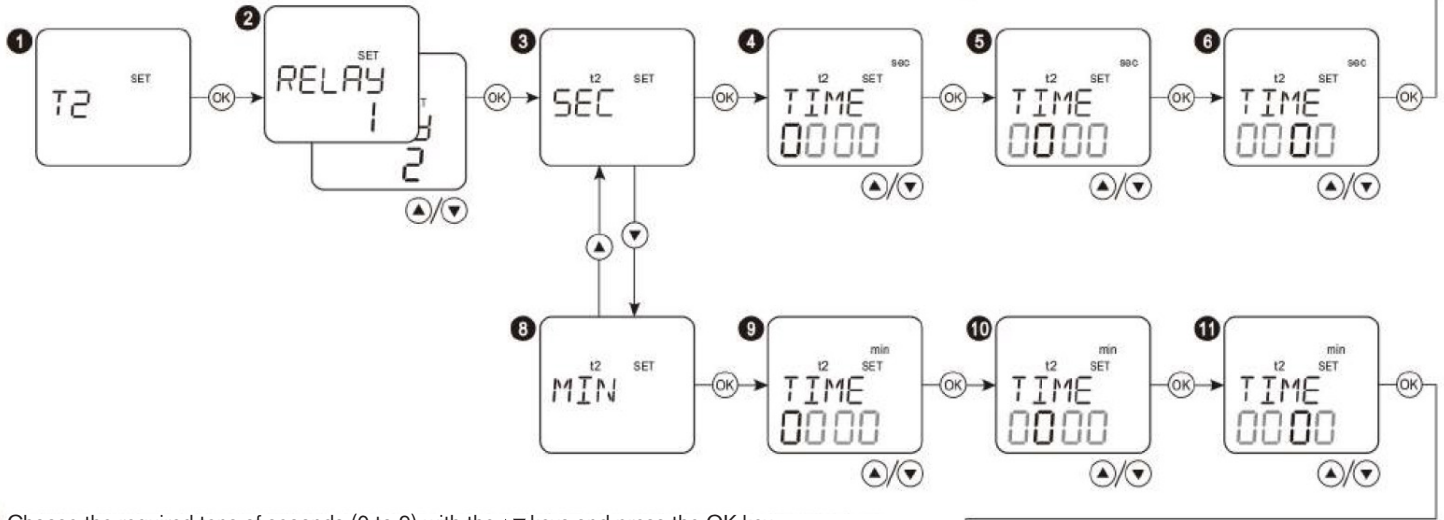
- 6 Choose the required tens of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 7 Choose the required units of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 8 If a time in minutes (up to 9999 minutes) is required select MIN with the ▲▼ keys and press the OK key.
- 9 Choose the required thousands of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 10 Choose the required hundreds of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 11 Choose the required tens of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 12 Choose the required units of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 13 Return to the main menu by pressing the MENU key.



Note: Press ▲ for longer than 0.5s to increase the numerical value more quickly and press ▼ for longer than 0.5s to decrease the numerical value more quickly.

## T2 TIME DELAY SETTING

- 1 Select the T2 time setting menu and press the OK key.
- 2 Select output relay 1 or output relay 2 with the ▲▼ keys and press the OK key.
- 3 If a time in seconds (up to 9999 seconds) is required select SEC with the ▲▼ keys and press the OK key.
- 4 Choose the required thousands of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 5 Choose the required hundreds of seconds (0 to 9) with the ▲▼ keys and press the OK key.



- 6 Choose the required tens of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 7 Choose the required units of seconds (0 to 9) with the ▲▼ keys and press the OK key.
- 8 If a time in minutes (up to 9999 minutes) is required select MIN with the ▲▼ keys and press the OK key.
- 9 Choose the required thousands of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 10 Choose the required hundreds of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 11 Choose the required tens of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 12 Choose the required units of minutes (0 to 9) with the ▲▼ keys and press the OK key.
- 13 Return to the main menu by pressing the MENU key.

Note: Press ▲ for longer than 0.5s to increase the numerical value more quickly and press ▼ for longer than 0.5s to decrease the numerical value more quickly.

## TIMING FUNCTION MODES

### 01 Delay on Energise (On Delay)



The time period T starts when the supply voltage is applied. At the end of the time period T, the output relay energises and remains energised until the supply voltage is removed.

### 02 Interval



The output relay energises when the supply voltage is applied. At the end of the time period T the relay de-energises.

### 03 Delayed Cycling with Equal on and Off Time



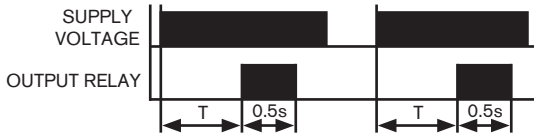
With the supply voltage applied the output relay is de-energised for the time period T then energises for the same time period T, repeating indefinitely until the supply voltage is removed.

### 04 Immediate Cycling with Equal On and Off Time



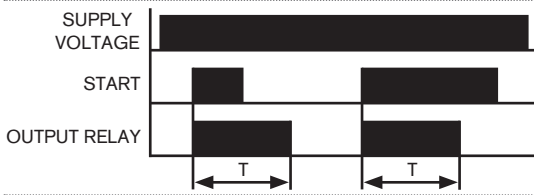
With the supply voltage applied the output relay energises for the time period T then de-energises for the same time period T, repeating indefinitely until the supply voltage is removed.

05 Delayed Pulse (0.5 second)



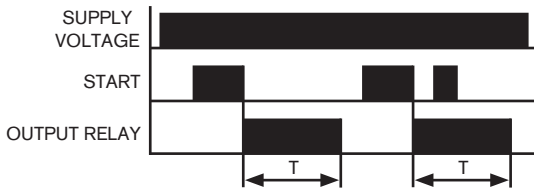
The time period T starts when the supply voltage is applied. At the end of the time period, the output relay energises for 0.5sec before de-energising.

06 Interval (Close to Start)



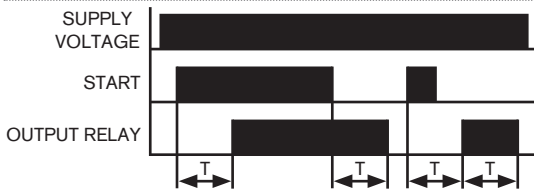
With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). At the end of the time period T the relay de-energises.

07 Interval (Open to Start)



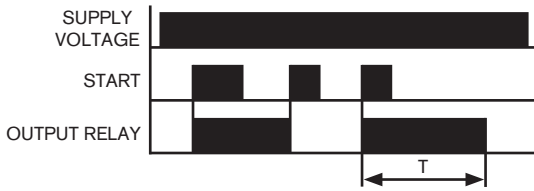
With the supply voltage applied to the timer the output relay energises when the start contacts are opened (falling edge). At the end of the time period T the relay de-energises. During the time period T re-closing and opening the start contacts does not effect the timer output.

08 Delay On Delay Off



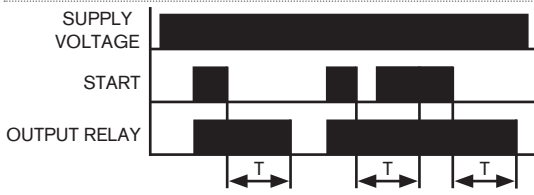
With the supply voltage applied to the timer the time period T starts when the start contacts are closed (rising edge). At the end of the time period T the relay energises. Once the start contacts are then opened (falling edge) the time period T restarts and at the end of the time period T the output relay de-energises. If the start impulse is shorter than the time period T the output is energised for the time period T only.

09 Bistable with Time Limit



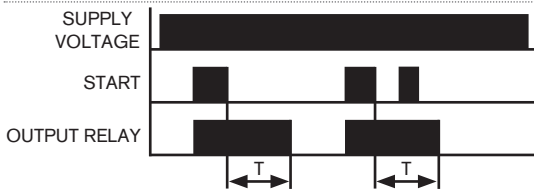
With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). The output relay de-energises when the start contacts are closed again (rising edge) or when the time period T passes. The length of the start impulse is not critical.

10 Delay on De-Energise (Re-triggerable)



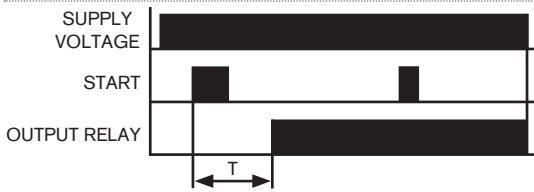
With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). When the start contacts are opened the timing starts and at the end of the time period T the relay de-energises. If the start contacts are closed again before the time period T has elapsed the output will remain energised. Once the start contacts are opened again and time period T elapses the output relay will de-energise.

11 Delay on De-Energise (Non Re-triggerable)



With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). When the start contacts are opened the timing starts and at the end of the time period T the output relay de-energises. If the start contacts are closed again before the time period T has elapsed the output will still de-energise when the time period T elapses.

12 Delay on Energise (Pulse to Start)



With the supply voltage applied to the timer the time period starts when the start contacts are closed (rising edge). At the end of the time period T, the output relay energises and remains energised until the supply voltage is removed. With the power supply to the timer maintained, re-closing the start contacts has no effect on the output relay.

13 Output Permanently On



With the supply voltage applied to the timer the output relay permanently energises indefinitely until the supply voltage is removed.

14 Output Permanently Off



With the supply voltage applied to the timer the output relay remains permanently de-energised indefinitely.

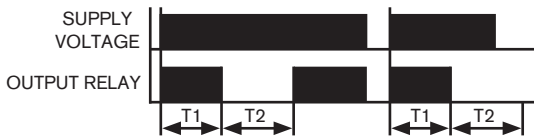


15 Single Delayed Cycle with Variable On and Off Times



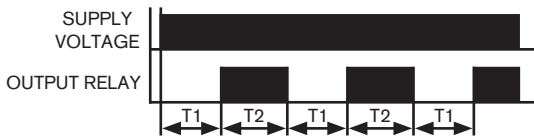
With the supply voltage applied the output relay is de-energised for time period T1 then energises for time period T2. Removing and then reapplying the supply voltage to the timer will restart this timing process.

16 Single Immediate Cycle with Variable On and Off Times



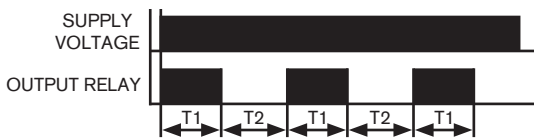
With the supply voltage applied the output relay energises for the time period T1 then de-energises for time period T2 followed by permanently energising until power is removed from the timer. Removing and then reapplying the supply voltage to the timer will restart this timing process.

17 Delayed Cycling with Variable On and Off Times



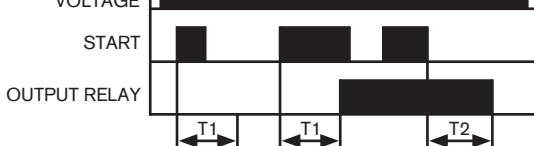
With the supply voltage applied the output relay is de-energised for the time period T1 then energises for time period T2, repeating indefinitely until the supply voltage is removed.

18 Immediate Cycling with Variable On and Off Times



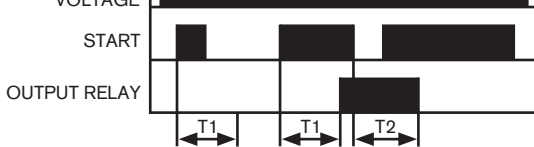
With the supply voltage applied the output relay energises for the time period T1 then de-energises for time period T2, repeating indefinitely until the supply voltage is removed.

19 Delay On Delay Off with Variable Off and On Times (Re-triggerable)



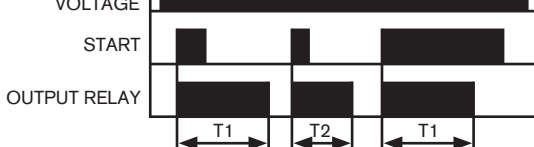
With the supply voltage applied to the timer the time period T1 starts when the start contacts are closed (rising edge). At the end of the time period T1 the relay energises. Once the start contacts are opened (falling edge) the time period T2 starts and at the end of the time period T2 the output relay de-energises. If the start impulse is shorter than the time period T1 the output will not energise.

20 Delay On Delay Off with Variable Off and On Times (Non Re-triggerable)



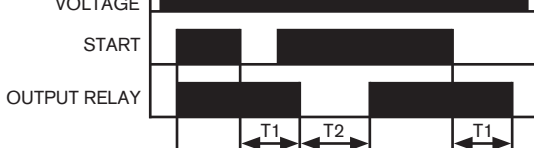
With the supply voltage applied to the timer the time period T1 starts when the start contacts are closed (rising edge) and after time T1 the output relay energises. Opening the start contacts (falling edge) starts time period T2 then after T2 the output relay de-energises. If the start impulse is shorter than the time period T1 the output will not energise. Re-closing the start contacts when the output relay is energised has no effect on the output relay.

21 Interval with Alternate Time Duration



With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). At the end of the time period T1 the relay de-energises. Closing the start contacts again will energise the output relay for time period T2 then the output relay de-energises. A further close of the start contacts will energise the output relay for time period T1 and so on. The length of the start impulse is not critical.

22 Delay Off Delay On



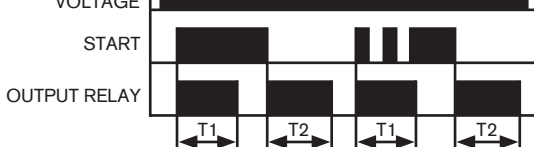
With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). When the start contacts are opened the timing starts and at the end of the time period T1 the output relay de-energises for time period T2. During this T2 period the output relay will not energise. After the T2 period passes if the start contacts are closed the output relay will energise again and the process restarts.

23 Delay On Energise followed by Independent Interval



With the supply voltage applied to the timer the time period T1 starts when the start contacts are closed (rising edge). At the end of the time period T1, if the start contacts are still closed, the output relay energises for time period T2. If the start impulse is shorter than the time period T1 the output will not energise. Re-closing the start contacts when the output relay is energised has no effect on the output relay.

24 Interval followed by Independent Delay on De-Energise



With the supply voltage applied to the timer the output relay energises when the start contacts are closed (rising edge). At the end of the time period T1 the relay de-energises. Once the start contacts are opened (falling edge) the output relay energises again for time period T2 and at the end of the time period T2 the output relay de-energises. Re-closing the start contacts when the output relay is energised has no effect on the output relay.

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**TEMPATRON**

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