**Timing Diagrams Overview**

### Guide to Reading Timing Function Diagrams

- **Power Applied**: Start Input Terminals Shorted
- **Power Removed**: Start Input Terminals Opened
- **Timer Power**: NO Contact Closes
- **Input Signal**: NC Contact Opens
- **NO Contact**: Timer Begins Counting
- **NC Contact**: NO Contact

### Timing Function Diagrams Overview

#### ON-Delay 1 (power start)

When voltage is applied to the coil, the relay contacts remain in the off state and the set time begins. When the set time has elapsed, the relay contacts transfer to the on state. The contacts remain in the on state until the timer is reset. The timer is reset by removing the coil voltage. Applicable models: RTE-P(B)1, GT3A-1, -2, -3, GE1A, GT5Y and GT5P.

#### ON-Delay 2 (signal start)

Voltage is applied to the coil at all times. When a start input is supplied, the relay contacts remain in the off state and the set time begins. When the set time has elapsed, the relay contacts transfer to the on state. The contacts remain in the on state until the timer is reset. The timer is reset by applying a reset input or by removing the coil voltage. Applicable models: GT3A-4 and RTE-P(B) 2.

#### Interval 1 (power start)

When voltage is applied to the coil, the relay contacts transfer immediately to the on state and the set time begins. When the set time has elapsed, the relay contacts transfer to the off state. The contacts remain in the off state until the timer is reset. The timer is reset by removing the coil voltage. Applicable models: RTE-P(B)1, GT3A-1, -2, -3.

#### Interval 2 (signal start)

Voltage is applied to the coil at all times. When a start signal is supplied, the relay contacts transfer immediately to the on state and the set time begins. When the set time has elapsed, the relay contacts transfer to the off state. The contacts remain in the off state until the timer is reset. The timer is reset by applying a reset input or by removing the coil voltage. Applicable model: GT3A-5.

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1. T = set time, T' = shorter than set time, T_s = one shot output time
2. For more detailed timing diagrams, see specifications for individual timer models.

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**Notes**

1. If power is disconnected during actual timing, most electronic timers reset to the preset time, ready for the re-application of supply voltage (except for GT3F “true power OFF Delay”).
2. NO = Normally open.
3. NC = Normally closed.
Solution:

**Cycle 1 (power start, OFF first)**

When voltage is applied to the coil, the contacts remain in the **off state** and the set time begins. At the end of the set time, the contacts transfer to the **on state** and remain in the **on state** until the set time elapses. The timer cycles between the two states until power is removed from the coil. Removing the coil voltage resets the timer. The set time for both the **on state** and the **off state** is the same. Applicable models: GT3A-1, -2, -3 and RTE-P(B)1.

![Cycle 1 Diagram](image1)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Mode</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT3A-1, -2, -3</td>
<td>C</td>
<td>843</td>
</tr>
<tr>
<td>RTE-*1</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

**Cycle 3 (power start, ON first)**

When voltage is applied to the coil, the contacts immediately transfer to the **on state** and the set time begins. At the end of the set time, the contacts transfer to the **off state** and remain in the **off state** until the set time elapses. The timer cycles between the two states until power is removed from the coil. Removing the coil voltage resets the timer. The set time for both the **off state** and the **on state** is the same. Applicable models: GT3A-1, -2, -3 and RTE-P(B)1.

![Cycle 3 Diagram](image2)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Mode</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT3A-1, -2, -3</td>
<td>D</td>
<td>843</td>
</tr>
<tr>
<td>RTE-*1</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

**One Shot 1 (signal start, retriggerable)**

Voltage is applied to the coil at all times. When a start signal is supplied, the contacts remain in the **off state** and the set time begins. If another start signal is supplied (before set time has elapsed) the set time restarts, as the contacts remain in the **on state**. Successive pulses at a frequency greater than the set time will cause the contacts to remain in the "**On state**" indefinitely. When the set time has elapsed the contacts transfer back to the **off state**. The contacts remain in the **off state** until the next start signal is supplied (no reset is necessary). The timer can be reset by application of a reset input or by removing coil voltage. Applicable model: GT3A-6.

![One Shot 1 Diagram](image3)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Mode</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT3A-6</td>
<td>A</td>
<td>843</td>
</tr>
</tbody>
</table>

**One Shot 2 (signal start)**

Voltage is applied to the coil at all times. When a start signal is supplied, the contacts immediately transfer to the **on state** and the set time begins. If another start signal is supplied (before set time has elapsed), the set time will not be affected. When the set time has elapsed, the contacts transfer back to the **off state**. The contacts remain in the **off state** until the next start signal is supplied (no reset is necessary). The timer can be reset by application of a reset input or by removing coil voltage. Applicable models: GT3A-6 and RTE-P(B)2.

![One Shot 2 Diagram](image4)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Mode</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT3A-6</td>
<td>C</td>
<td>843</td>
</tr>
<tr>
<td>RTE-*2</td>
<td>F</td>
<td>836</td>
</tr>
</tbody>
</table>
Timers

**Timing Diagrams Overview**

**Timers**

**Signal ON/OFF-Delay 1**

Voltage is supplied to the coil at all times. When a maintained start signal is supplied, the contacts remain in the **on state** and the set time begins. When the set time has elapsed, the contacts transfer to the **off state**. The contacts then remain in the **on state** until either the next start signal is supplied (no reset is necessary). The timer is reset by application of a reset signal or removal of power. Applicable model: GT3A-6.

**Signal ON/OFF-Delay 2**

Voltage is supplied to the coil at all times. When a maintained start signal is supplied, the contacts remain in the **on state** and the set time begins. When the set time has elapsed, the contacts transfer to the **off state**. The contacts then remain in the **on state** until either the next start signal is supplied (no reset is necessary). The timer can be reset by application of a reset input or by removing coil voltage. Applicable models: GT3A-4 and GT3A-5.

**Signal ON/OFF-Delay 3**

Voltage is supplied to the coil at all times. When a momentary start signal is supplied, the contacts remain in the **on state** and the set time begins. When the set time has elapsed, the contacts transfer to the **off state**. The contacts then remain in the **on state** until the next start signal is supplied (no reset is necessary). The timer is reset by application of a reset input or by removing coil voltage. Applicable model: GT3A-5.

**One Shot ON-Delay (signal start)**

When voltage is applied to the coil, the preset time is initiated and the contacts remain in the **off state** for the preset time. Following the preset time, the contacts transfer to the **on state**. They remain in the **on state** until the next start signal is supplied (no reset is necessary). The timer can be reset by either a reset input or removal of the coil voltage. Applicable model: GT3A-5.

<table>
<thead>
<tr>
<th>Type No.</th>
<th>GT3A-4</th>
<th>RTE-*2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>See Page</td>
<td>843</td>
<td>836</td>
</tr>
</tbody>
</table>

**Signal OFF-Delay 1**

Voltage is supplied to the coil at all times. When a start signal is supplied, the contacts remain in the **on state** and the set time begins. When the set time has elapsed, the contacts transfer to the **off state**. The contacts then remain in the **on state** until either the next start signal is supplied (no reset is necessary). The timer can be reset by application of a reset signal or removal of power. Applicable model: GT3A-5.

**Signal OFF-Delay 2**

Voltage is supplied to the coil at all times. When a maintained start signal is supplied, the contacts remain in the **off state** and the set time begins. When the set time has elapsed, the contacts transfer back to the **off state**. They remain in the **off state** until the next start signal is supplied (no reset is necessary). The timer can be reset by application of a reset input or by removing coil voltage. Applicable model: GT3A-4.

**Signal OFF-Delay 3**

Voltage is supplied to the coil at all times. When a momentary start signal is supplied, the contacts remain in the **on state** and the set time begins. When the set time has elapsed, the contacts transfer back to the **off state**. They remain in the **off state** until the next start signal is supplied (no reset is necessary). The timer is ready for the next start signal. The timer is reset by application of a reset signal or removal of power. Applicable model: GT3A-5.

**One Shot OFF-Delay**

When voltage is applied to the coil, the preset time is initiated and the contacts remain in the **on state**. Following the preset time, the contacts transfer to the **off state**. They remain in the **off state** until the next start signal is supplied (no reset is necessary). The timer can be reset by either a reset input or removal of the coil voltage. Applicable model: GT3A-6.

**Note:**

For more detailed timing diagrams, see specifications for individual timer models.

1. T = set time, T₁ = shorter than set time, Tₛ = one shot output time
2. For more detailed timing diagrams, see specifications for individual timer models.
**Sequential Start (power start)**

When voltage is applied to the coil, both contacts remain in the OFF state and the set time, T1, begins. When T1 has elapsed, output 1 comes on and T2 begins. When T2 has elapsed, output 2 comes on. Both outputs remain on until power is removed from the coil. Applicable model: GT3W-A.

![Sequential Start Diagram](image)

**True Power-OFF Delay**

When voltage is applied, output comes on immediately; when voltage is removed from the coil, the timer begins timing (internal capacitors power the timing circuit). When time has expired, contacts transfer back to the OFF state. If power is reapplied before the elapsed time has expired, the timing function will reset back to the starting point. Applicable models: GT3F-1, 2.

![True Power-OFF Delay Diagram](image)

**Recycler Outputs (power start)**

When voltage is applied to the coil, both contacts remain in the off state and time T1 begins. When T1 has elapsed, both contacts transfer to the ON state and T2 begins. When T2 has elapsed, both contacts transfer back to the OFF state and T1 begins again. The cycle continues until power is removed, at which time both contacts transfer back to the OFF state. Applicable model: GT3W-A.

![Recycler Outputs Diagram](image)

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1. T = set time, \( T' \) = shorter than set time, \( T_s \) = one shot output time
2. For more detailed timing diagrams, see specifications for individual timer models.