# GT3A Series — Analog Timers

UL, c-uL Listed
File No. E55996

**Key features of the GT3A series include:**

- **4 selectable operation modes on each model**
- **External start, reset, and pause inputs**
- **Panel mount or socket mount**
- **Large variety of timing functions**
- **Power and output status indicating LEDs**

## Specifications

| | GT3A-1 | GT3A-2 | GT3A-3 | GT3A-4,-5,-6 |
|---|---|---|---|---|
| **Operation** | Multi-mode | | | Multi-mode with inputs (11 pins) |
| **Time Range** | 0.05s to 180 hours | | | |
| **Rated Voltage** | 100 to 240V AC, 50/60Hz<br>12V DC<br>24V AC, 50/60Hz / 24V DC | | | |
| **Contact Ratings** | 125V AC/250V AC, 3A;<br>30V DC, 1A (resistive load) | | 125V AC/250V AC, 5A;<br>30V DC, 5A (resistive load) | |
| **Minimum Applicable Load** | 5V, 10mA (reference value) | | | |
| **Voltage Tolerance** | AF20 (100V AC): 85 to 264V AC<br>AD24: 20.4 to 26.4V AC/21.6 to 26.4V DC<br>D12: 10.8 to 13.2V DC | | | |
| **Error** | ±0.2%, ±10 msec (repeat, voltage, temperature) | | | |
| **Setting Error** | ±10% maximum | | | |
| **Reset Time** | 60msec maximum | | | |
| **Insulation Resistance** | 100MΩ minimum | | | |
| **Dielectric Strength** | Between power and output terminals: 2,000V AC, 1 minute<br>Between contacts of different poles: 2,000V AC, 1 minute<br>Between contacts of the same pole: 750V AC, 1 minute | | | |
| **Power Consumption** (approximate) | Delayed SPDT | Delayed SPDT + instantaneous SPDT | Delayed DPDT | Delayed DPDT |
| | 10.8VA (200V AC, 60Hz) | 13.5VA (200V AC, 60Hz) | 14.4VA (200V AC, 60Hz) | 4.7VA (100V AC, 60Hz),<br>14.4VA (200V AC, 60Hz) |
| | – | 12VDC/1W | 12VDC/1.1W | 12VDC/0.8W |
| | | 24VDC/0.7W<br>24VAC/1.2VA | 24VDC/0.6W<br>24VAC/1.3VA | 24VDC/0.6W<br>24VAC/1.3VA |
| **Mechanical Life** | 10,000,000 operations minimum | | 5,000,000 operations minimum | |
| **Electrical LIfe** | 50,000 operations minimum (rated load) | | 100,000 operations minimum (rated load) | |
| **Weight** (approximate) | 63g | 73g | 79g | 80g |
| **Vibration Resistance** | 100m/sec$^2$ (approximate 10G) | | | |
| **Shock Resistance** | Operating extremes: 100m/sec$^2$ (approximate 10G)<br>Damage limits: 500m/sec$^2$ (approximate 50G) | | | |
| **Operating Temperature** | –10 to +50°C | | | |
| **Operating Humidity** | 45 to 85% RH | | | |
| **Storage Temperature** | –30 to +80°C | | | |
| **Housing Color** | Gray | | | |

**GT3A Table of Contents**

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## Part Number List

### Part Numbers: GT3A-1, -2, -3

| Mode Of Operation | Rated Voltage Code | Time Range | Output | Contact | Complete Part No. | |
|---|---|---|---|---|---|---|
| | | | | | 8-Pin | 11-Pin |
| A: ON-delay 1<br>B: Interval 1<br>C: Cycle 1<br>D: Cycle 3 | AF20: 100 to 240V AC (50/60Hz) | 0.05s. to 180 hours | 250V AC, 3A, 30V DC, 1A (resistive load) | Delayed SPDT | GT3A-1AF20 | GT3A-1EAF20 |
| | AF20: 100 to 240V AC (50/60Hz)<br>D12: 12V DC<br>AD24: 24V AC (50/60Hz)/24V DC | | | Delayed SPDT + Instantaneous SPDT | GT3A-2AF20 | GT3A-2EAF20 |
| | | | | | GT3A-2D12 | GT3A-2ED12 |
| | | | | | GT3A-2AD24 | GT3A-2EAD24 |
| | | | 240V AC, 5A, 24V DC, 5A (resistive load) | Delayed DPDT | GT3A-3AF20 | GT3A-3EAF20 |
| | | | | | GT3A-3D12 | GT3A-3ED12 |
| | | | | | GT3A-3AD24 | GT3A-3EAD24 |

1. *For wiring schematics and timing diagrams for GT3A-1, -2, -3, see pages G-16, G-17, or G-18 respectively.*
2. *For more details about time ranges, see instructions on page G-22.*
3. *For socket and accessory part numbers, see page G-48.*

### Part Numbers: GT3A-4, -5, -6

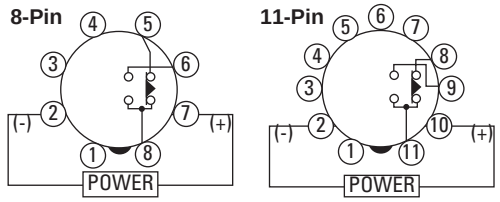
| Mode of Operation | Rated Voltage Code | Time Range | Output | Contact | Input | Complete Part No. | |
|---|---|---|---|---|---|---|---|
| | | | | | | A (11-pin) | B (11-pin) |
| A: ON-Delay 2<br>B: Cycle 2<br>C: Signal ON/OFF-Delay 1<br>D: Signal OFF-Delay 1 | AF20: 100 to 240V AC (50/60Hz)<br>D12: 12V DC<br>AD24: 24V AC (50/60Hz)/24V DC | 0.05 seconds to 180 hours | 250V AC, 5A, 24V DC, 5A (resistive load) | Delayed DPDT | Start Reset Gate | GT3A-4AF20 | GT3A-4EAF20 |
| | | | | | | GT3A-4D12 | GT3A-4ED12 |
| | | | | | | GT3A-4AD24 | GT3A-4EAD24 |
| A: Interval 2<br>B: One-Shot Cycle<br>C: Signal ON/OFF-Delay 2<br>D: Signal OFF-Delay 2 | AF20: 100 to 240V AC (50/60Hz)<br>AD24: 24V AC (50/60Hz)/24V DC | | | | | GT3A-5AF20 | GT3A-5EAF20 |
| | | | | | | GT3A-5AD24 | GT3A-5EAD24 |
| A: One-Shot<br>B: One-Shot ON-Delay<br>C: One-Shot 2<br>D: Signal ON/OFF-Delay 3 | | | | | | GT3A-6AF20 | GT3A-6EAF20 |
| | | | | | | GT3A-6AD24 | GT3A-6EAD24 |

4. *For wiring schematics and timing diagrams GT3A-4,-5,-6, see pages G-19, G-20, and G-21 respectively.*
5. *For more details about time ranges, see instructions on page G-22.*
6. *A (11-pin) and B (11-pin) differ in the way inputs are wired.*
7. *For socket and accessory part numbers, see page G-48.*
8. *For the timing diagrams overview, see page G-4.*

## Timing Diagrams/Schematics

### GT3A- 1 Timing Diagrams

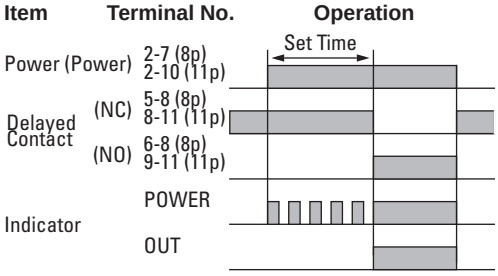
#### Delayed SPDT




**Operation Mode Selection**

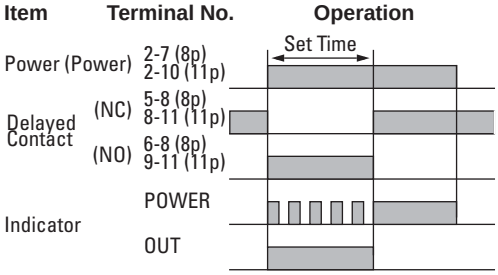
**ON-Delay 1**

MODE A



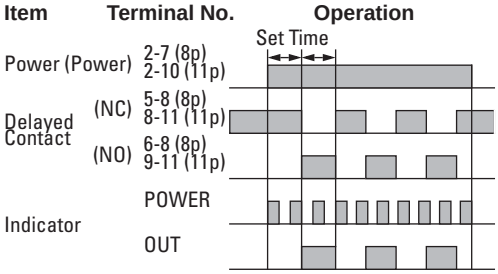

**Interval 1**

MODE B



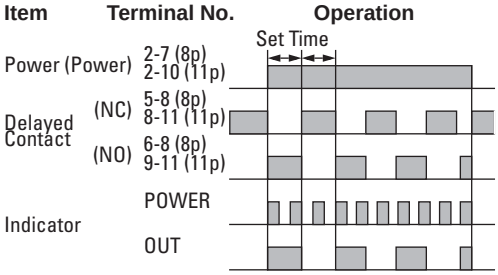

**Cycle 1**
(OFF first)

MODE C




**Cycle 3**
(ON first)

MODE D

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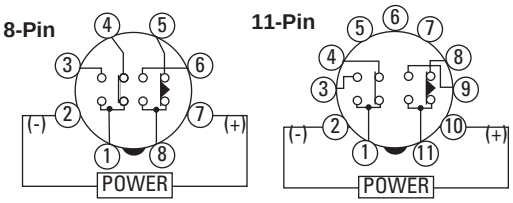
## GT3A- 2 Timing Diagrams

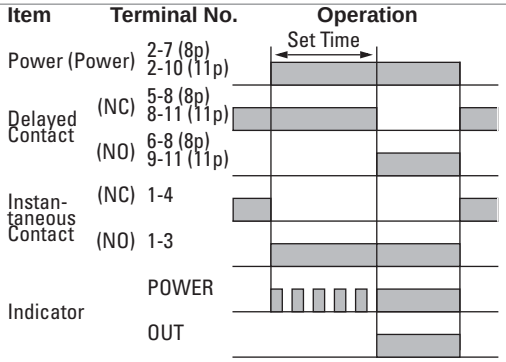
### Delayed SPDT + Instantaneous SPDT

**Operation Mode Selection**



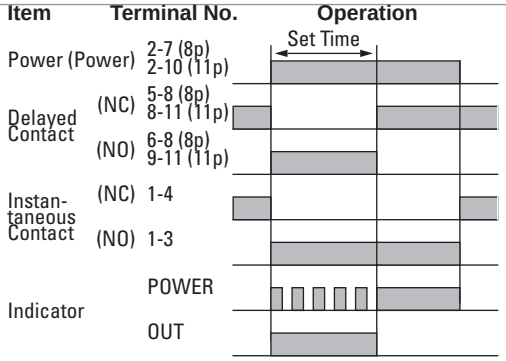

**ON-Delay 1**

MODE A



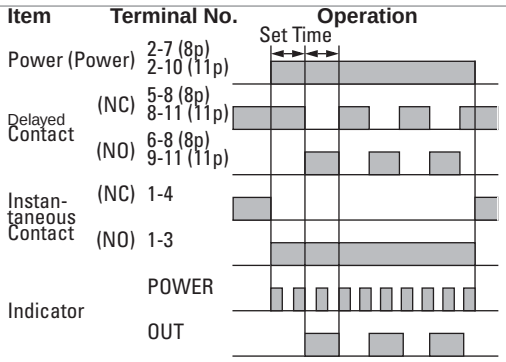

**Interval 1**

MODE B



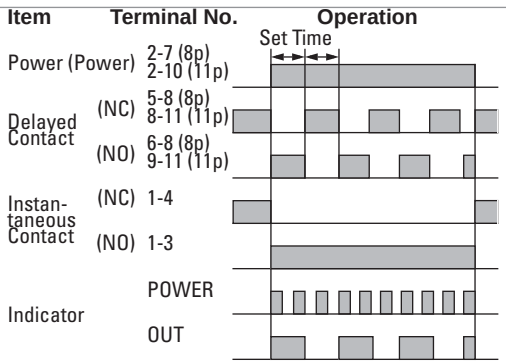

**Cycle 1**
(OFF first)

MODE C




**Cycle 3**
(ON first)

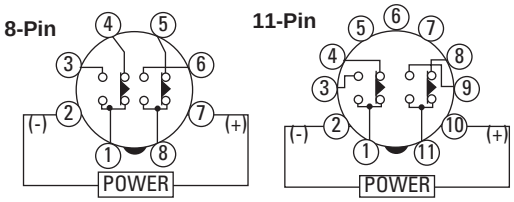
MODE D



## GT3A-3 Timing Diagrams

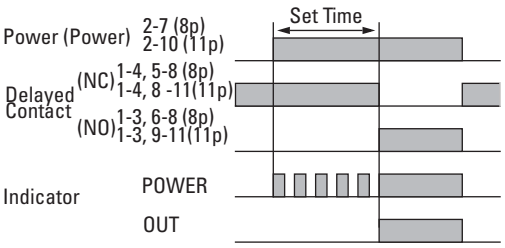
### Delayed DPDT

**Operation Mode Selection**



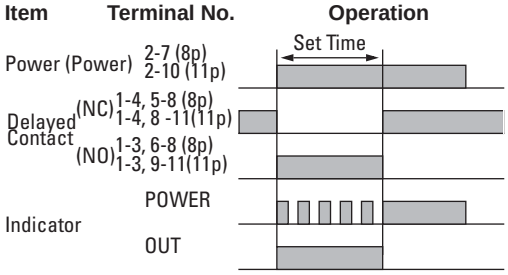

#### ON-Delay 1

MODE **A**



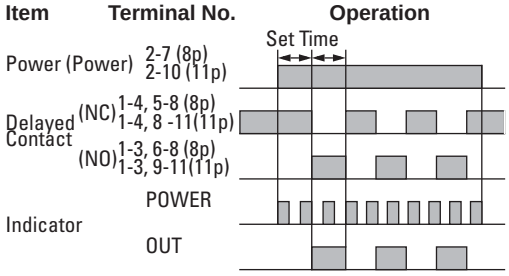

#### Interval 1

MODE **B**



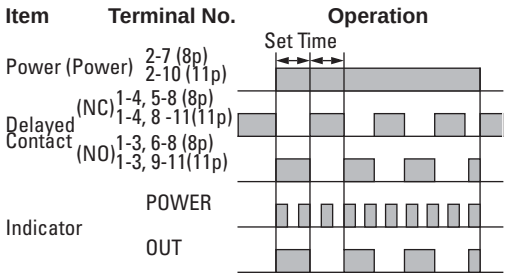

#### Cycle 1
(OFF first)

MODE **C**




#### Cycle 3
(ON first)

MODE **D**

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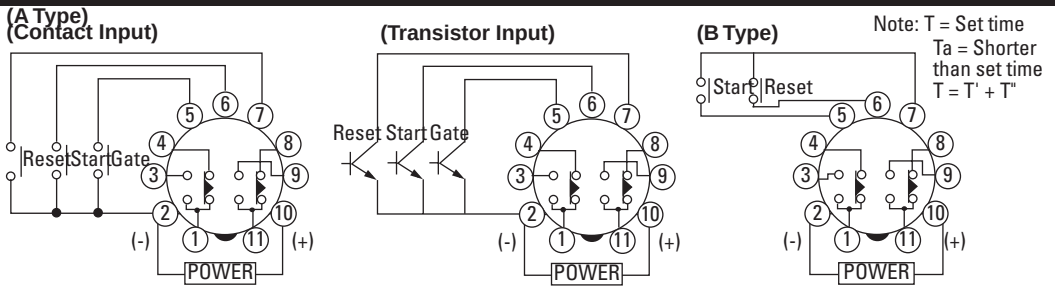
## GT3A-4 Timing Diagrams

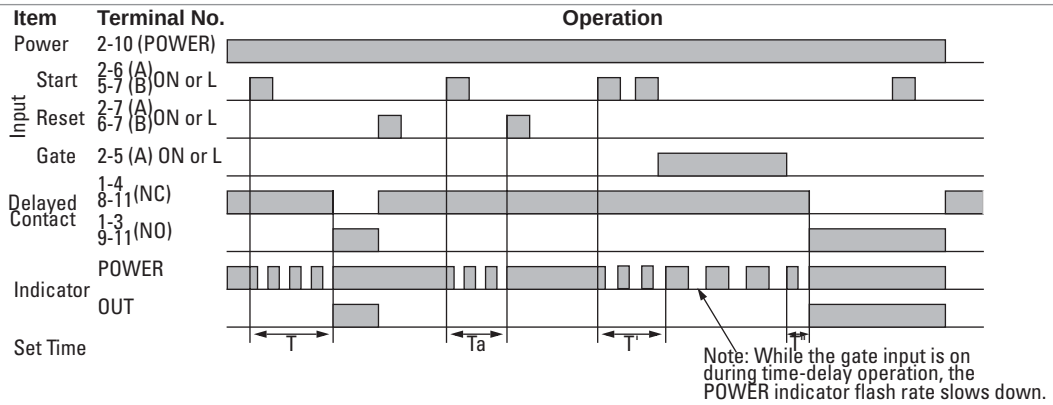
### Delayed DPDT

**Operation Mode Selection**



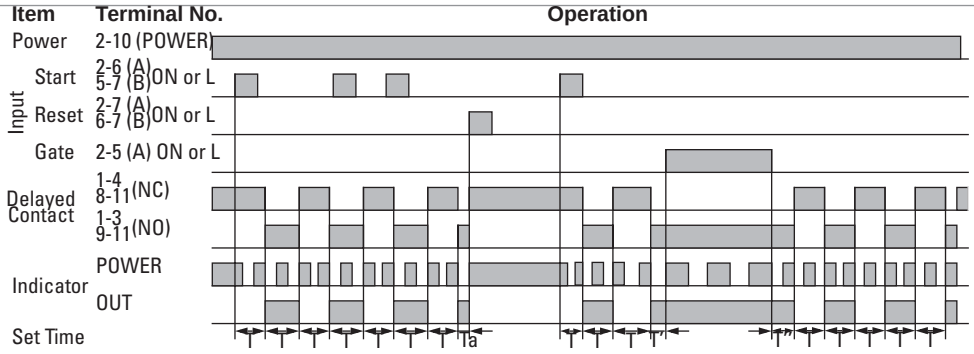

**ON-Delay 2**

MODE A



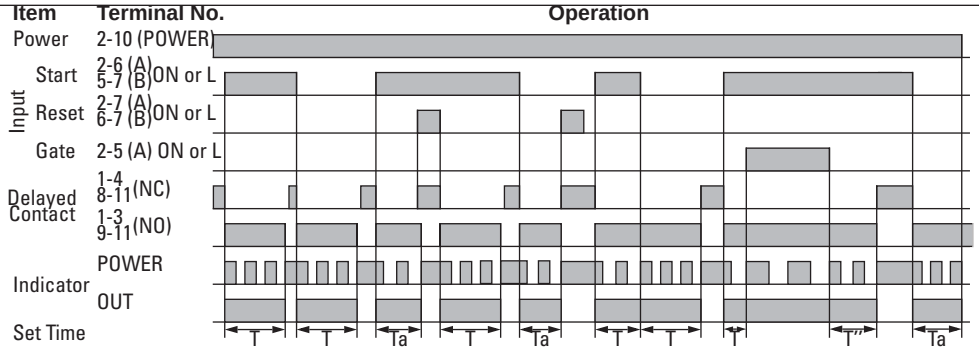

**Cycle 2**

MODE B



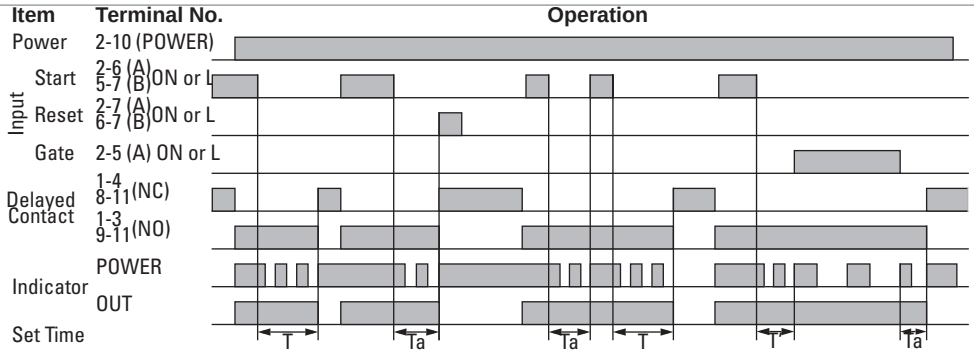

**Signal ON/OFF-Delay 1**

MODE C




**Signal OFF-Delay 1**

MODE D

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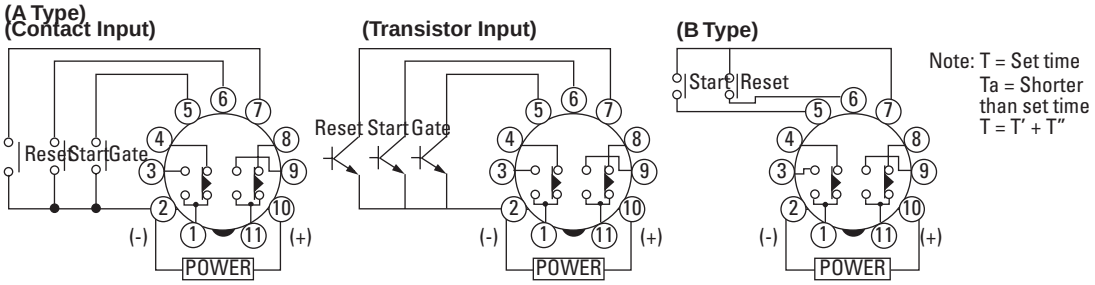
## GT3A- 5 Timing Diagrams

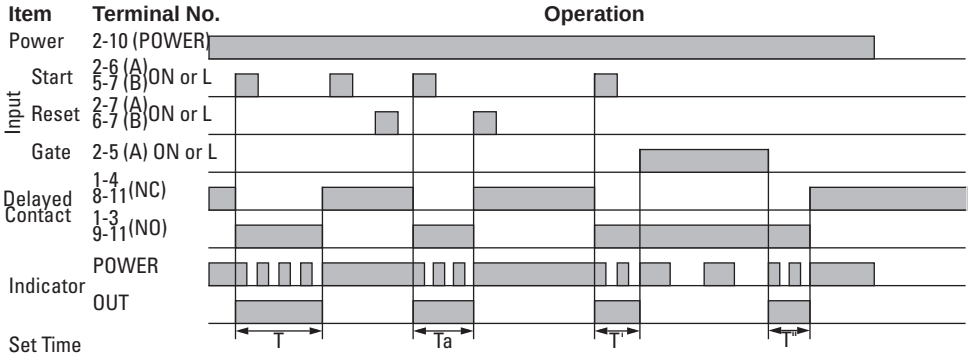
### Delayed DPDT

**Operation Mode Selection**



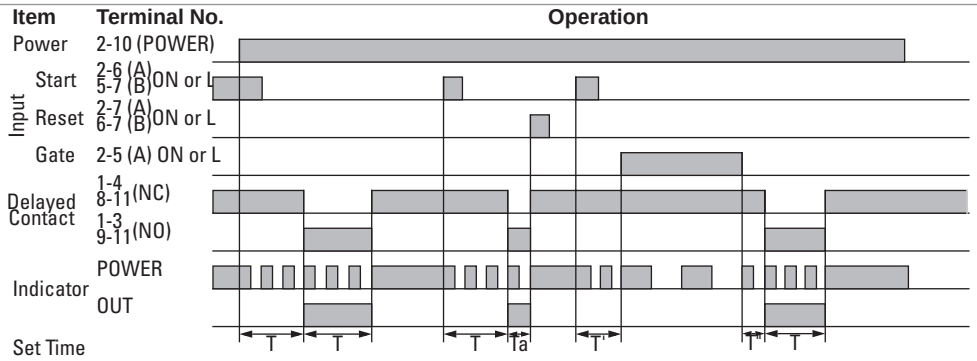

**Interval 2**

MODE A



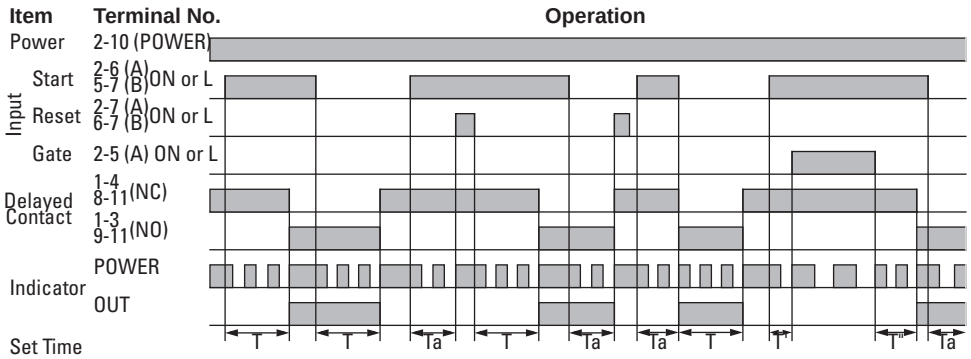

**One-Shot Cycle**

MODE B



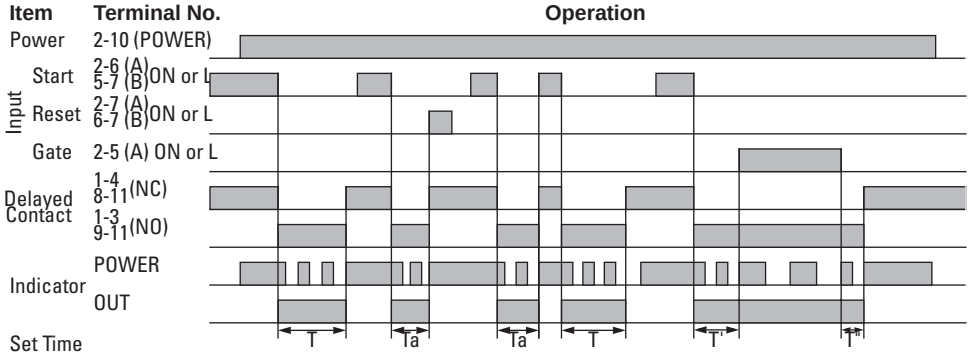

**Signal ON/OFF-Delay 2**

MODE C




**Signal OFF-Delay 2**

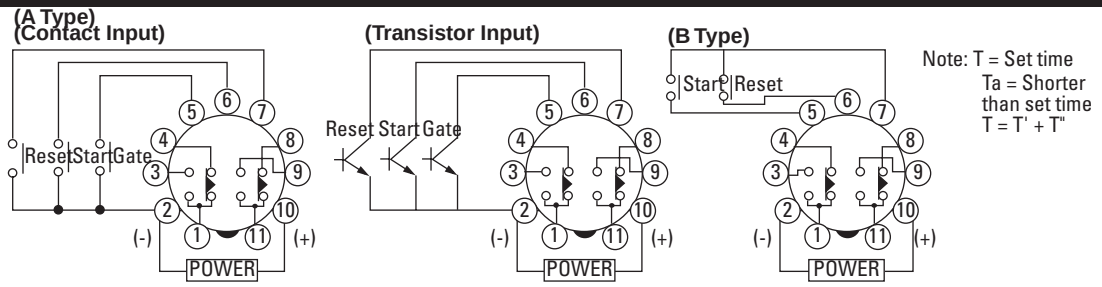
MODE D



## GT3A- 6 Timing Diagrams

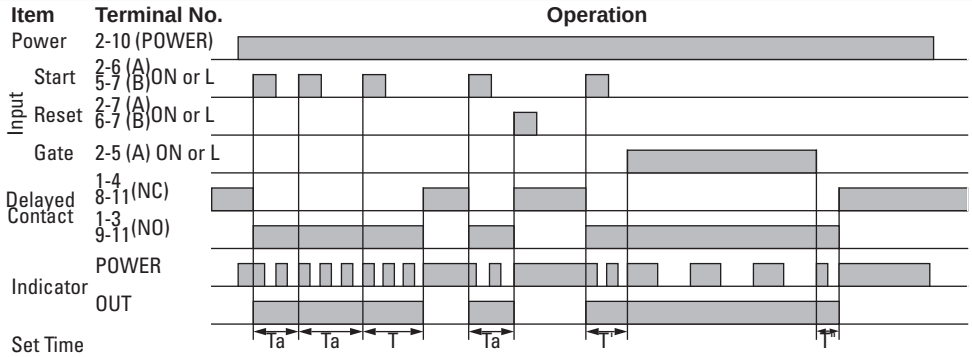
### Delayed DPDT

**Operation Mode Selection**



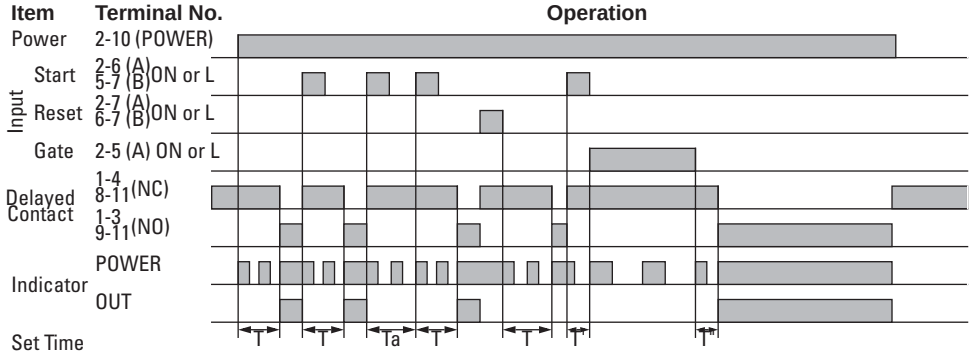

**One-Shot 1**

MODE A



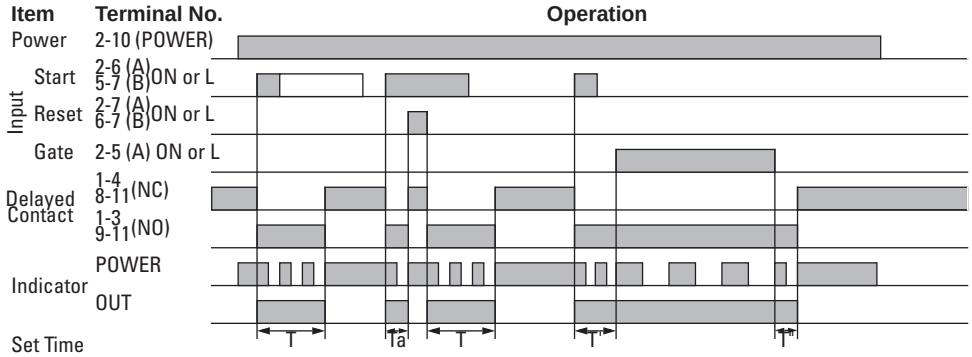

**One-Shot ON-Delay**

MODE B



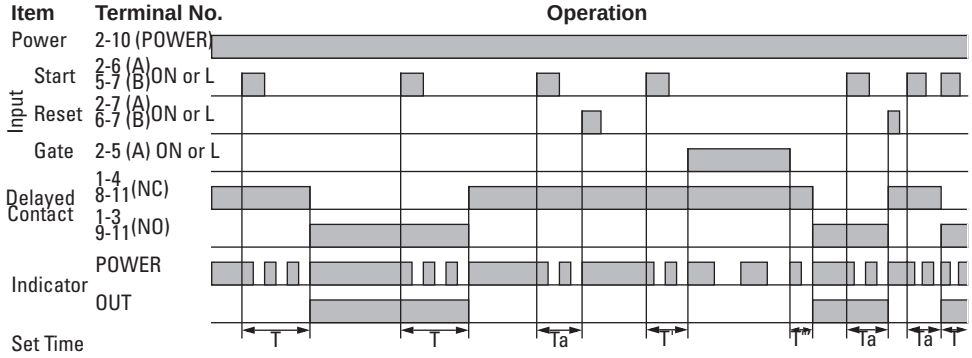

**One Shot 2**

MODE C

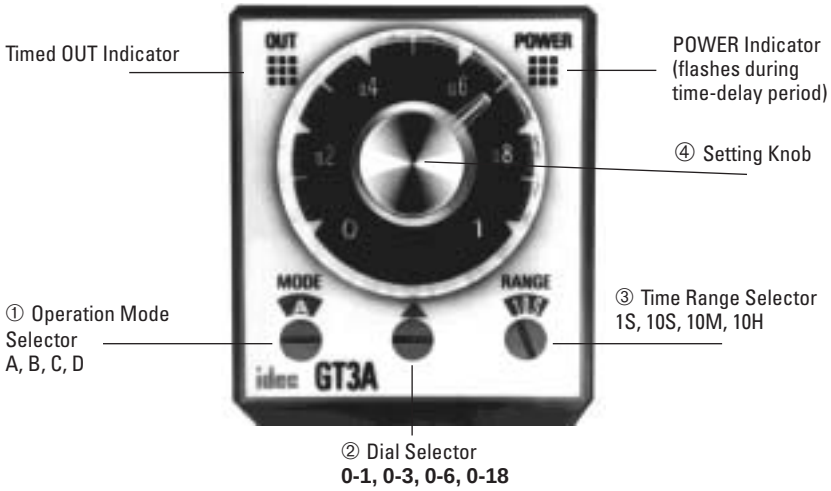



**Signal ON/OFF-Delay 3**

MODE D



## Instructions: Setting GT3A Series Timers




| Step 1. | Desired Mode of Operation | | Selection | Remarks |
|---|---|---|---|---|
| | For Timers | Mode of Operation | ① Operation Mode Selector | |
| Select the desired mode of operation. | GT3A-1<br>GT3A-2<br>GT3A-3 | ON-delay 1 | A | The desired operation mode can be selected from the A, B, C, and D modes using the Operation Mode Selector. Change the operation mode from A to B, C, and D in turn by turning the operation mode selector clockwise using a flat screwdriver which is a maximum of 0.156" (4mm) wide. The selected mode is displayed in the window. |
| | | Interval 1 | B | |
| | | Cycle 1 | C | |
| | | Cycle 3 | D | |
| | GT3A-4 | ON-delay 2 | A | |
| | | Cycle 2 | B | |
| | | Signal ON/OFF-delay 1 | C | |
| | | Signal OFF-delay 1 | D | |
| | GT3A-5 | Interval 2 | A | |
| | | One-shot cycle | B | |
| | | Signal ON/OFF-delay 2 | C | |
| | | Signal OFF-delay 2 | D | |
| | GT3A-6 | One-shot 1 | A | |
| | | One-shot ON-delay | B | |
| | | One-shot 2 | C | |
| | | Signal ON/OFF-delay 3 | D | |

| Step 2. | Desired Time Range | Selection | | Remarks |
|---|---|---|---|---|
| | Time Ranges | ② Dial Selector | ③Time Range Selector | |
| Select the time range that contains the desired time period. | 0.05 seconds to 1 second | 0-1 | 1S | The desired time range is selected by setting both ② Dial Selector and ③ Time Range Selector. |
| | 0.05 seconds to 3 seconds | 0-3 | | |
| | 0.05 seconds to 6 seconds | 0-6 | | |
| | 0.15 seconds to 18 seconds | 0-18 | | |
| | 0.1 seconds to 10 seconds | 0-1 | 10S | |
| | 0.3 seconds to 30 seconds | 0-3 | | |
| | 0.6 seconds to 60 seconds | 0-6 | | |
| | 1.8 seconds to 180 seconds | 0-18 | | |
| | 6 seconds to 10 minutes | 0-1 | 10M | |
| | 18 seconds to 30 minutes | 0-3 | | |
| | 36 seconds to 60 minutes | 0-6 | | |
| | 108 seconds to 180 minutes | 0-18 | | |
| | 6 minutes to 10 hours | 0-1 | 10H | |
| | 18 minutes to 30 hours | 0-3 | | |
| | 36 minutes to 60 hours | 0-6 | | |
| | 108 minutes to 180 hours | 0-18 | | |

| Step 3. | Selection | |
|---|---|---|
| **Set the precise period of time desired by using the ④ Setting Knob.** | | |

# GT3D Series — Digital Timers

**Key features of the GT3D series include:**

- **Precise time setting using digital thumbwheel switches**
- **Elapsed or time remaining LED display**
- **6 time ranges, 16 timing functions**
- **Time delays up to 99.9 hours**

UL Recognized
File No.E55996

CSA Certified
File No.LR58183
LR96764
LR83814

Cert. No.
BL9801133323911 (LVD)
E9971113332388 (EMC)

**Specifications**

| | | GT3D-2 | GT3D-3 | GT3D-4 | GT3D-8 |
|---|---|---|---|---|---|
| **Operation System** | | Solid state CMOS circuitry | | | |
| **Operation** | | Multi-mode | | | Multi-mode. one-shot output |
| **Time Range** | | 0.01s to 99.9 hours | | | |
| **Rated Voltage** | | 100 to 240V AC (50/60Hz), 24V AC (50/60Hz)/24V DC | | | |
| **Contact Ratings** | | 125V AC/250V AC, 3A; 30V DC/1A (resistive load) | 125V AC/250V AC, 5A; 30V DC/5A (resistive load) | | |
| **Contact Form** | | Delayed SPDT + instantaneous SPDT | Delayed DPDT | Delayed DPDT | Delayed DPDT |
| **Minimum Applicable Load** | | 5V, 10mA (reference value) | | | |
| **Voltage Tolerance** | | AF20 (100–240V AC): 85 to 264V AC<br>AD24 (AC): 20.4 to 26.4V AC<br>AD24 (DC): 21.6 to 26.4V DC | | | |
| **Error** | | ±0.3% ±50ms (voltage, repeat, and temperature) | | | |
| **Setting Error** | | ±0.5% ±50ms | | | |
| **Reset Time** | | 60ms maximum | | | |
| **Insulation Resistance** | | 100MΩ minimum | | | |
| **Dielectric Strength** | | Between power and output terminals: 2,000V AC, 1 minute<br>Between contacts of different poles: 2,000V AC, 1 minute<br>Between contacts of the same pole: 750V AC, 1 minute | | | |
| **Power Consumption** (approximate) | **AF20** | 11.8VA | 11.6VA | 3.7VA (100V AC, 60Hz)<br>11.6VA (200V AC, 60Hz) | |
| | **AD24 AC/DC** | 1VA/0.8W | 2.1VA/0.9W | 2.1VA /0.9W | |
| **Mechanical Life** | | 10,000,000 operations minimum | 5,000,000 operations minimum | | |
| **Electrical Life** (at rated load) | | 50,000 operations minimum | 100,000 operations minimum | | |
| **Outputs** | **Relay** | 250V AC, 3A, 30V DC, 1A (resistive load) | 240V AC/, 24V DC, 5A (resistive load) | | |
| **Vibration Resistance** | | 100N (approximate 10G) | | | |
| **Shock Resistance** | | Operating extremes: 100N (approximate 10G)<br>Damage limits: 500N (approximate 50G) | | | |
| **Operating Temperature** | | –10 to +50°C | | | |
| **Storage Temperature** | | –30 to +80°C | | | |
| **Operating Humidity** | | 45 to 85% RH | | | |
| **Weight** (approximate) | | 70g | 75g | 76g | |
| **Housing Color** | | Gray | | | |



**GT3D Table of Contents**

Specifications — G-23
Part Number List — G-24
Timing Diagrams/ Schematics — G-25
Instructions: Setting Timer — G-33
GT3 Accessories — G-48
GT3 Instructions: Wiring Inputs — G-50
GT3 Dimensions — G-52
Timing Diagrams Overview — G-4

## Part Number List

### Part Numbers: GT3D-1/GT3D-2/GT3D-3

| Mode of Operation | Time Range | Output | Contact | Rated Voltage Code | Complete Part No. | |
|---|---|---|---|---|---|---|
| | | | | | 8-Pin | 11-Pin |
| 1-A: ON-delay 1<br>1-B: Interval 1 first<br>1-C: Cycle 1 (OFF first)<br>1-D: Cycle 3 (ON first) | 0.01s to 99.9 hours | 250V AC, 3A, 30V DC, 1A (resistive load) | Delayed SPDT + instantaneous SPDT | 100 to 240V AC (50/60Hz) | GT3D-2AF20 | GT3D-2EAF20 |
| | | | | 24V AC/DC | GT3D-2AD24 | — |
| | | 240V AC/, 24V DC, 5A (resistive load) | Delayed DPDT | 100 to 240V AC (50/60Hz) | GT3D-3AF20 | GT3D-3EAF20 |
| | | | | 24V AC/DC | GT3D-3AD24 | — |

### Part Numbers: GT3D-4

| Mode of Operation | Time Range | Output | Contact | Rated Voltage Code | Complete Part No. | |
|---|---|---|---|---|---|---|
| | | | | | A (11-pin) | B (11-pin) |
| 1-A: ON-delay 1<br>1-B: Interval 1 first<br>1-C: Cycle 1 (OFF first)<br>1-D: Cycle 3 (ON first)<br>2-A: ON-delay 2<br>2-B: Cycle 2<br>2-C: Signal ON/OFF-delay 1<br>2-D: Signal OFF-delay 1<br>2-E: Interval 2<br>2-F: One-shot cycle<br>3-A: Signal ON/OFF-delay 2<br>3-B: Signal OFF-delay 2<br>3-C: One-shot 1<br>3-D: One-shot ON-delay<br>3-E: One-shot 2<br>3-F: Signal ON/OFF-delay 3 | 0.01s to 99.9 hours | 240V AC/24V DC, 5A (resistive load) | Delayed DPDT | 100 to 240V AC (50/60Hz) | GT3D-4AF20 | GT3D-4EAF20 |
| | | | | 24V AC/DC | GT3D-4AD24 | — |

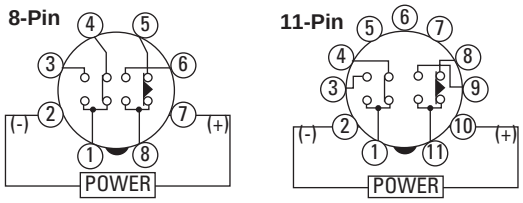
### Part Numbers: GT3D-8

| Mode of Operation | Time Range | Output | Contact | Rated Voltage Code | Complete Part No. (11-pin) |
|---|---|---|---|---|---|
| 1: ON-delay one-shot 1<br>2: Cycle one-shot<br>3: ON-delay one-shot 2 | 0.01s to 99.9 hours | 240V AC/24V DC, 5A (resistive load) | Delayed DPDT | 100 to 240V AC (50/60Hz) | GT3D-8AF20 |
| | | | | 24V AC/DC | GT3D-8AD24 |

1. *For wiring schematics and timing diagrams GT3D, see pages G-25 to G-32.*
2. *For more details about time ranges, see instructions on page G-33.*
3. *A (11-pin) and B (11-pin) differ in the way inputs are wired.*
4. *For socket and accessory part numbers, see page G-48.*
5. *For timing diagrams overview, see page G-4.*

## GT3D-2 Timing Diagrams

| Contact | Delayed SPDT + Instantaneous SPDT |
|---|---|

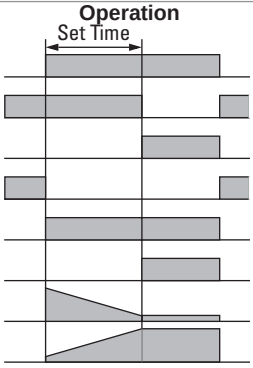



### ON-Delay 1

Time Remaining **1** — **A**

Time Elapsed 1 — **A**

| Item | | Terminal No. |
|---|---|---|
| Power | (Power) | 2-7 (8p) 2-10 (11p) |
| Delayed Contact | (NC) | 1-4, 5-8 (8p) 1-4, 8-11 (11p) |
| | (NO) | 1-3, 6-8 (8p) 1-3, 9-11 (11p) |
| Instan-taneous Contact | (NC) | 1-4 |
| | (NO) | 1-3 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |

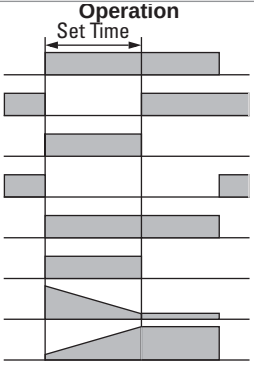



### Interval 1

Time Remaining **1** — **B**

Time Elapsed 1 — **B**

| Item | | Terminal No. |
|---|---|---|
| Power | (Power) | 2-7 (8p) 2-10 (11p) |
| Delayed Contact | (NC) | 1-4, 5-8 (8p) 1-4, 8-11 (11p) |
| | (NO) | 1-3, 6-8 (8p) 1-3, 9-11 (11p) |
| Instan-taneous Contact | (NC) | 1-4 |
| | (NO) | 1-3 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |

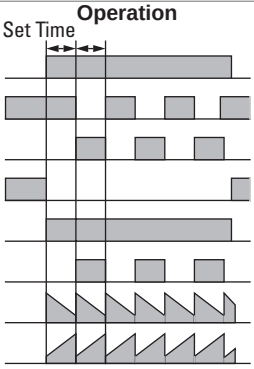



### Cycle 1 (OFF first)

Time Remaining **1** — **C**

Time Elapsed 1 — **C**

| Item | | Terminal No. |
|---|---|---|
| Power | (Power) | 2-7 (8p) 2-10 (11p) |
| Delayed Contact | (NC) | 1-4, 5-8 (8p) 1-4, 8-11 (11p) |
| | (NO) | 1-3, 6-8 (8p) 1-3, 9-11 (11p) |
| Instan-taneous Contact | (NC) | 1-4 |
| | (NO) | 1-3 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |

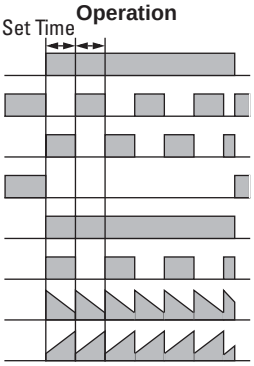



### Cycle 3 (ON first)

Time Remaining **1** — **D**

Time Elapsed 1 — **D**

| Item | | Terminal No. |
|---|---|---|
| Power | (Power) | 2-7 (8p) 2-10 (11p) |
| Delayed Contact | (NC) | 1-4, 5-8 (8p) 1-4, 8-11 (11p) |
| | (NO) | 1-3, 6-8 (8p) 1-3, 9-11 (11p) |
| Instan-taneous Contact | (NC) | 1-4 |
| | (NO) | 1-3 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |



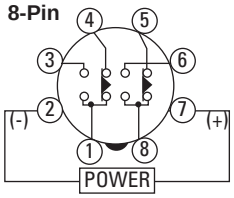

G Timers

## GT3D-3 Timing Diagrams

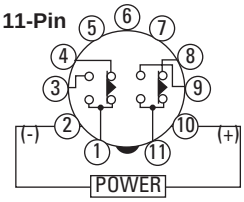
| Contact | Delayed DPDT |
|---|---|

**Operation Mode Selection**

**8-Pin**




**11-Pin**

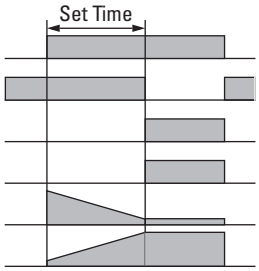



### ON-Delay 1

Time Remaining: 1 — A

Time Elapsed: 1 — A

| Item | Terminal No. | Operation |
|---|---|---|
| Power | (Power) 2-7 (8p), 2-10 (11p) | |
| Delayed Contact | (NC) 1-4, 5-8 (8p), 1-4, 8-11 (11p) | |
| | (NO) 1-3, 6-8 (8p), 1-3, 9-11 (11p) | |
| Indicator | OUT | |
| Digital Time Display | DOWN | |
| | UP | |

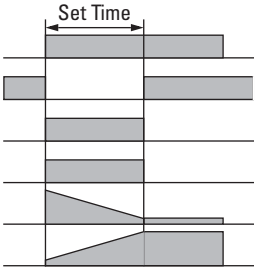



### Interval 1

Time Remaining: 1 — B

Time Elapsed: 1 — B

| Item | Terminal No. | Operation |
|---|---|---|
| Power | (Power) 2-7 (8p), 2-10 (11p) | |
| Delayed Contact | (NC) 1-4, 5-8 (8p), 1-4, 8-11 (11p) | |
| | (NO) 1-3, 6-8 (8p), 1-3, 9-11 (11p) | |
| Indicator | OUT | |
| Digital Time Display | DOWN | |
| | UP | |

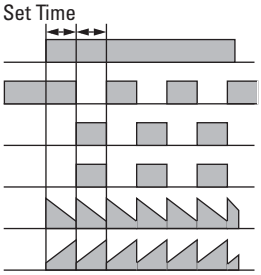



### Cycle 1 (OFF first)

Time Remaining: 1 — C

Time Elapsed: 1 — C

| Item | Terminal No. | Operation |
|---|---|---|
| Power | (Power) 2-7 (8p), 2-10 (11p) | |
| Delayed Contact | (NC) 1-4, 5-8 (8p), 1-4, 8-11 (11p) | |
| | (NO) 1-3, 6-8 (8p), 1-3, 9-11 (11p) | |
| Indicator | OUT | |
| Digital Time Display | DOWN | |
| | UP | |

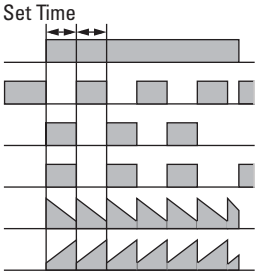



### Cycle 3 (ON first)

Time Remaining: 1 — D

Time Elapsed: 1 — D

| Item | Terminal No. | Operation |
|---|---|---|
| Power | (Power) 2-7 (8p), 2-10 (11p) | |
| Delayed Contact | (NC) 1-4, 5-8 (8p), 1-4, 8-11 (11p) | |
| | (NO) 1-3, 6-8 (8p), 1-3, 9-11 (11p) | |
| Indicator | OUT | |
| Digital Time Display | DOWN | |
| | UP | |



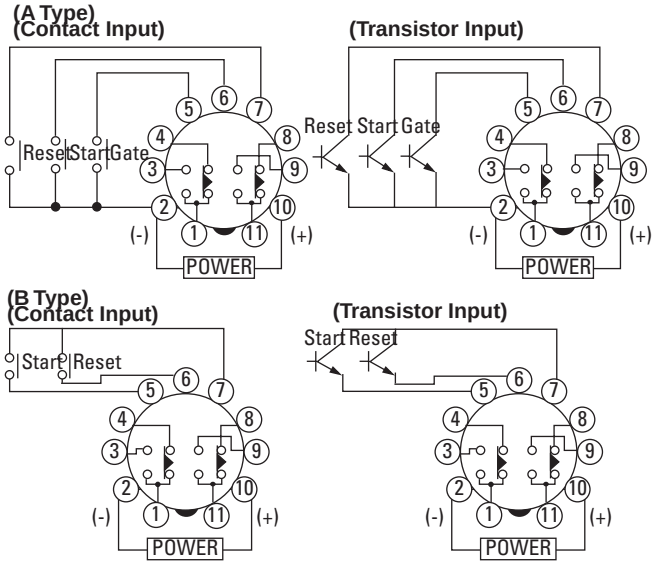

G Timers

## GT3D-4 Timing Diagrams

These timers require a start input. A gate and reset input are optional. Inputs are controlled by external pushbuttons. Reset occurs when the power is removed or when the reset input is supplied. The gate signal can be used to interrupt (freeze) timer functions. Timer functions resume when the gate input is removed. B style timers are not equipped for gate input.

### GT3D-4

**Delayed DPDT**



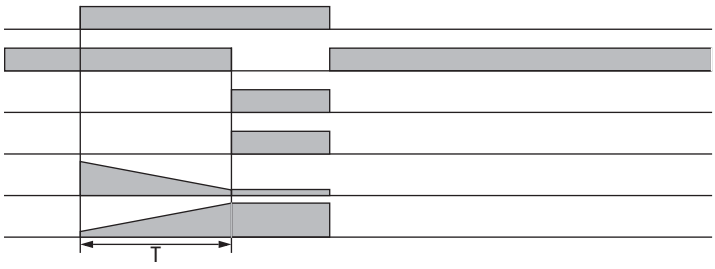

**ON-Delay 1**

Time Remaining: 1 — A

Time Elapsed: 1 — A

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Delayed Contact | (NC) | 1-4<br>8-11 | 8-11 |
| | (NO) | 1-3<br>9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



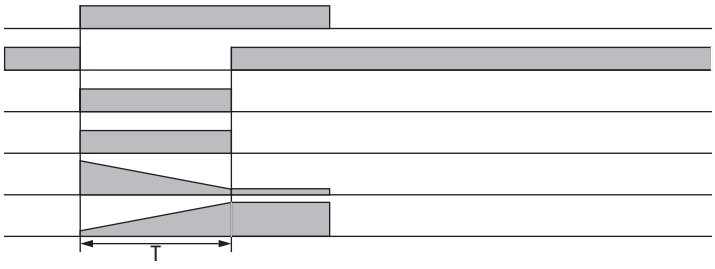

**Interval 1**

Time Remaining: 1 — B

Time Elapsed: 1 — B

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Delayed Contact | (NC) | 1-4<br>8-11 | 8-11 |
| | (NO) | 1-3<br>9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation




G Timers

## GT3D-4 Timing Diagrams, continued

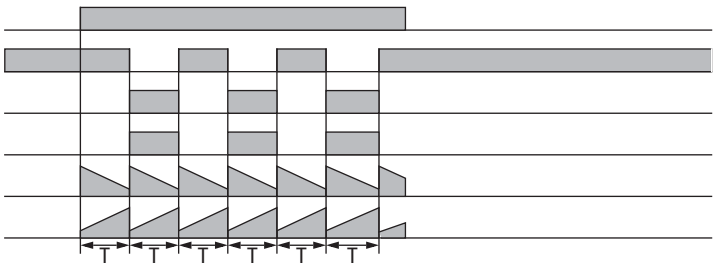
**Cycle 1** (OFF first)

Time Remaining: 1 — C

Time Elapsed: 1 — C

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Delayed Contact | (NC) | 1-4<br>8-11 | 8-11 |
| | (NO) | 1-3<br>9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



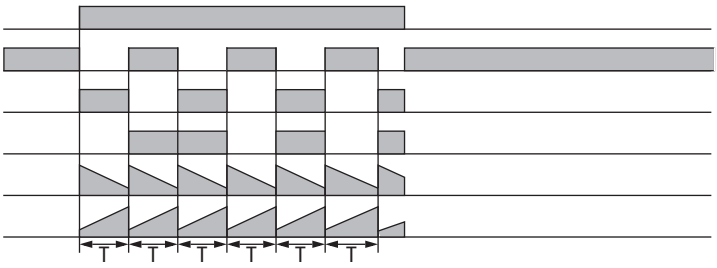

**Cycle 3** (ON first)

Time Remaining: 1 — D

Time Elapsed: 1 — D

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Delayed Contact | (NC) | 1-4<br>8-11 | 8-11 |
| | (NO) | 1-3<br>9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



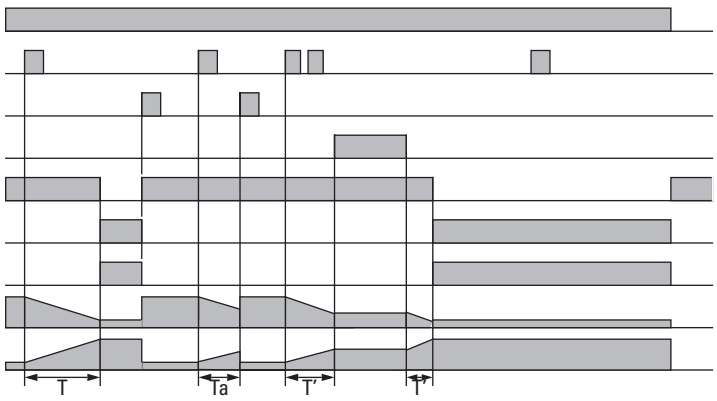

**ON-Delay 2**

Time Remaining: 2 — A

Time Elapsed: 2 — A

| Item | | | Terminal No. GT3D-4 | |
|---|---|---|---|---|
| Power | | | 2-10 (POWER) | |
| Input | Start | ON or L | 2-6 (A)<br>5-7 (B) | 3-6 |
| | Reset | ON or L | 2-7 (A)<br>6-7 (B) | 3-7 |
| | Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | | (NC) | 1-4<br>8-11 | 8-11 |
| | | (NO) | 1-3<br>9-11 | 9-11 |
| Indicator | | | OUT | |
| Digital Time Display | | | DOWN | |
| | | | UP | |
| Set Time | | | | |

Operation



## GT3D-4 Timing Diagrams, continued

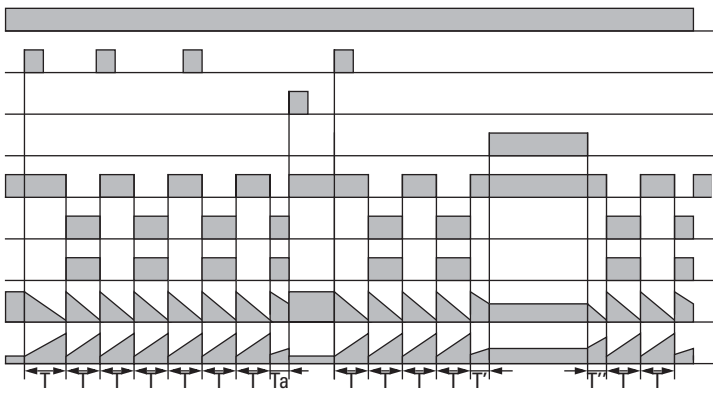
### Cycle 2

Time Remaining **2** — **B**

Time Elapsed 2 — **B**

| Item | | | Terminal No. GT3D-4 |
|---|---|---|---|
| Power | | | 2-10 (POWER) |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) 3-7 |
| | Gate | ON or L | 2-5 (A) 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 8-11 |
| | | (NO) | 1-3 9-11 9-11 |
| Indicator | | | OUT |
| Digital Time Display | | | DOWN |
| | | | UP |
| Set Time | | | |

Operation



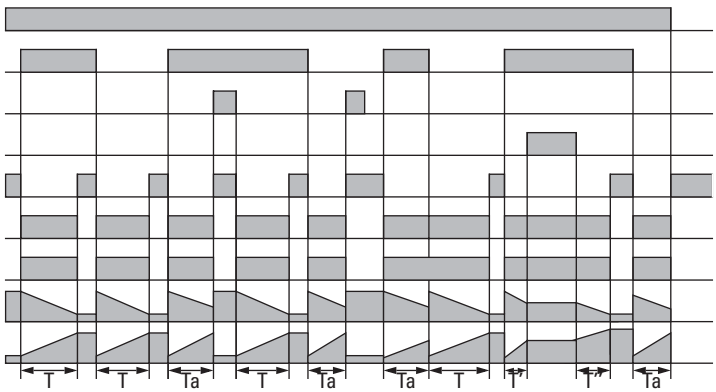

### Signal ON/OFF-Delay 1

Time Remaining **2** — **C**

Time Elapsed 2 — **C**

| Item | | | Terminal No. GT3D-4 |
|---|---|---|---|
| Power | | | 2-10 (POWER) |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) 3-7 |
| | Gate | ON or L | 2-5 (A) 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 8-11 |
| | | (NO) | 1-3 9-11 9-11 |
| Indicator | | | OUT |
| Digital Time Display | | | DOWN |
| | | | UP |
| Set Time | | | |

Operation



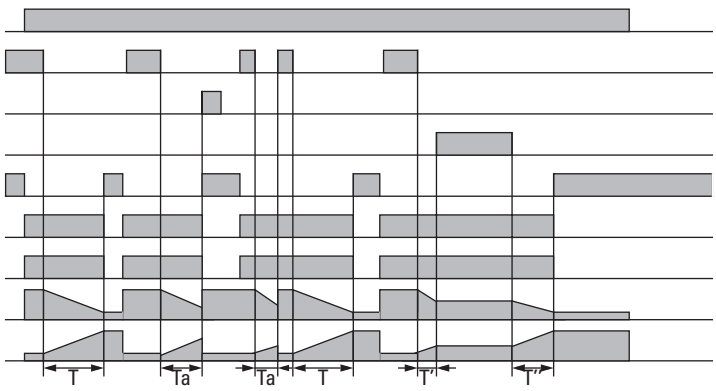

### Signal OFF-Delay 1

Time Remaining **2** — **D**

Time Elapsed 2 — **D**

| Item | | | Terminal No. GT3D-4 |
|---|---|---|---|
| Power | | | 2-10 (POWER) |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) 3-7 |
| | Gate | ON or L | 2-5 (A) 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 8-11 |
| | | (NO) | 1-3 9-11 9-11 |
| Indicator | | | OUT |
| Digital Time Display | | | DOWN |
| | | | UP |
| Set Time | | | |

Operation



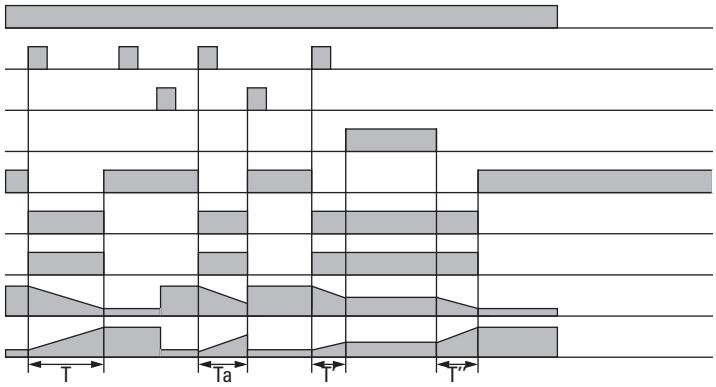

### Interval 2

Time Remaining **2** — **E**

Time Elapsed 2 — **E**

| Item | | | Terminal No. GT3D-4 |
|---|---|---|---|
| Power | | | 2-10 (POWER) |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) 3-7 |
| | Gate | ON or L | 2-5 (A) 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 8-11 |
| | | (NO) | 1-3 9-11 9-11 |
| Indicator | | | OUT |
| Digital Time Display | | | DOWN |
| | | | UP |
| Set Time | | | |

Operation




G Timers

## GT3D-4 Timing Diagrams, continued

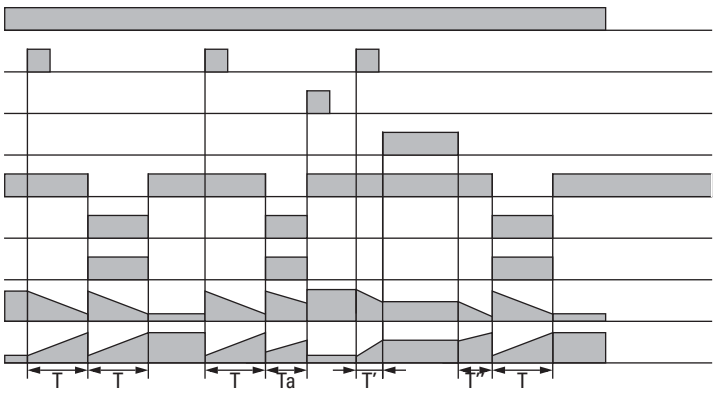
### One-Shot Cycle

Time Remaining: 2 — F

Time Elapsed: 2 — F

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Input: Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| Input: Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| Input: Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | (NC) | 1-4 8-11 | 8-11 |
| Delayed Contact | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



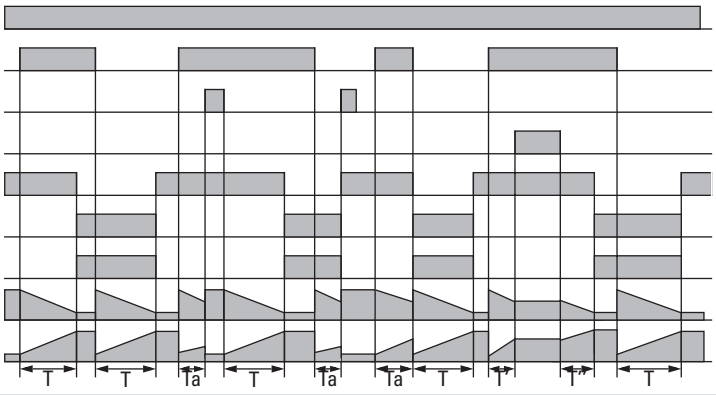

### Signal ON/OFF-Delay 2

Time Remaining: 3 — A

Time Elapsed: 3 — A

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Input: Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| Input: Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| Input: Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | (NC) | 1-4 8-11 | 8-11 |
| Delayed Contact | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



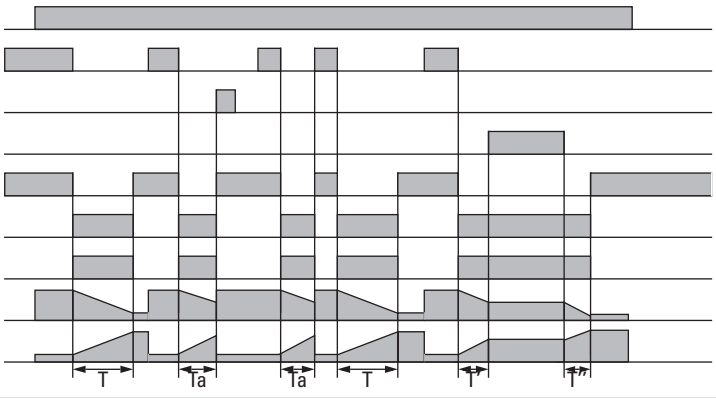

### Signal OFF-Delay 2

Time Remaining: 3 — B

Time Elapsed: 3 — B

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Input: Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| Input: Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| Input: Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | (NC) | 1-4 8-11 | 8-11 |
| Delayed Contact | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



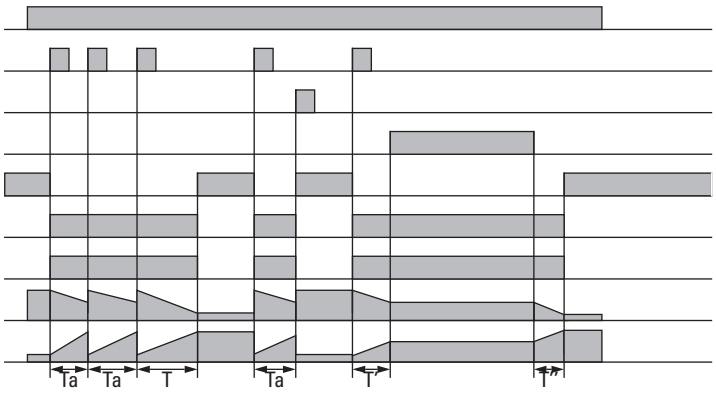

### One-Shot 1

Time Remaining: 3 — C

Time Elapsed: 3 — C

| Item | | Terminal No. GT3D-4 | |
|---|---|---|---|
| Power | | 2-10 (POWER) | |
| Input: Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| Input: Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| Input: Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | (NC) | 1-4 8-11 | 8-11 |
| Delayed Contact | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | OUT | |
| Digital Time Display | | DOWN | |
| | | UP | |
| Set Time | | | |

Operation



## GT3D-4 Timing Diagrams, continued

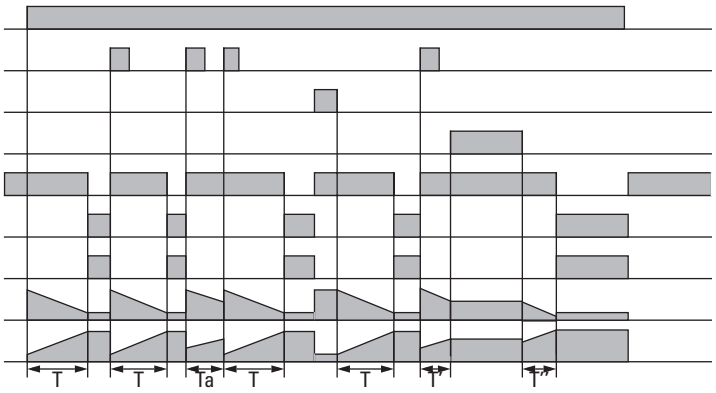
### One-Shot ON-Delay

Time Remaining: 3 — D

Time Elapsed: 3 — D

| Item | | | Terminal No. GT3D-4 | |
|---|---|---|---|---|
| Power | | | 2-10 (POWER) | |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| | Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 | 8-11 |
| | | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | | OUT | |
| Digital Time Display | | | DOWN | |
| | | | UP | |
| Set Time | | | | |

Operation



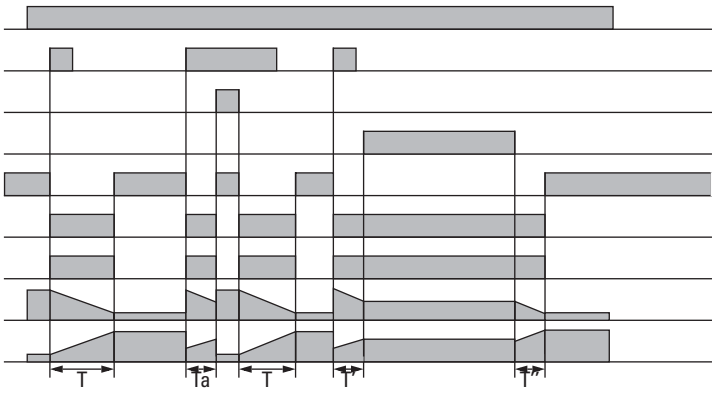

### One Shot 2

Time Remaining: 3 — E

Time Elapsed: 3 — E

| Item | | | Terminal No. GT3D-4 | |
|---|---|---|---|---|
| Power | | | 2-10 (POWER) | |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| | Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 | 8-11 |
| | | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | | OUT | |
| Digital Time Display | | | DOWN | |
| | | | UP | |
| Set Time | | | | |

Operation



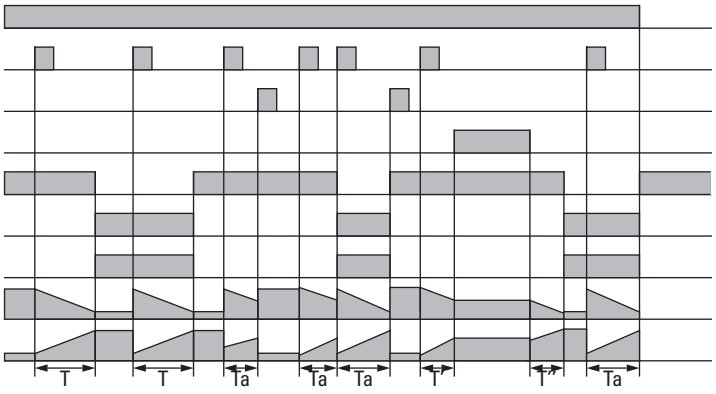

### Signal ON/OFF-Delay 3

Time Remaining: 3 — F

Time Elapsed: 3 — F

| Item | | | Terminal No. GT3D-4 | |
|---|---|---|---|---|
| Power | | | 2-10 (POWER) | |
| Input | Start | ON or L | 2-6 (A) 5-7 (B) | 3-6 |
| | Reset | ON or L | 2-7 (A) 6-7 (B) | 3-7 |
| | Gate | ON or L | 2-5 (A) | 3-5 |
| Delayed Contact | | (NC) | 1-4 8-11 | 8-11 |
| | | (NO) | 1-3 9-11 | 9-11 |
| Indicator | | | OUT | |
| Digital Time Display | | | DOWN | |
| | | | UP | |
| Set Time | | | | |

Operation

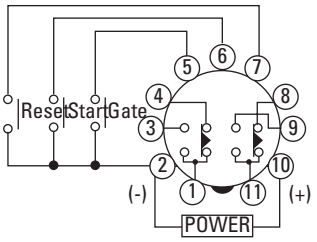



G Timers

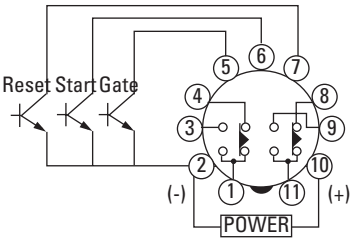
## GT3D-8 Timing Diagrams

### Delayed DPDT

(Contact Input)




(Transistor Input)




Note: T = Set time
Ta = Shorter than set time
Tb = Shorter than single-shot output time
T = T′ + T″
T0 = Single-shot output time (selected from A, B, C, D, E or F)

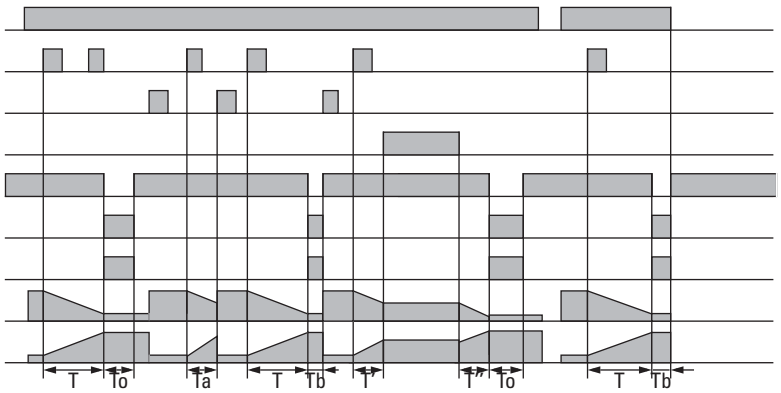
**ON-Delay One-Shot 1**

Time Remaining 1

Time Elapsed 1

| Item | | Terminal No. |
|---|---|---|
| Power | | 2-10 (POWER) |
| Input | Start | ON or L 2-6 |
| | Reset | ON or L 2-7 |
| | Gate | ON or L 2-5 |
| Delayed Contact | (NC) | 1-4, 8-11 |
| | (NO) | 1-3, 9-11 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |
| Set Time | | |

Operation



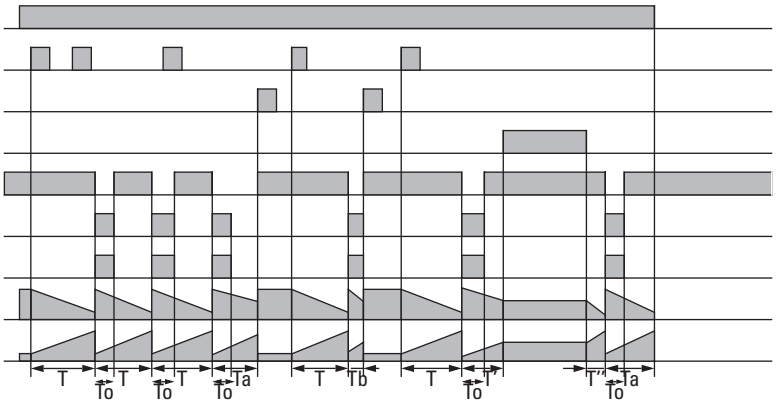

**Cycle One-Shot**

Time Remaining 2

Time Elapsed 2

| Item | | Terminal No. |
|---|---|---|
| Power | | 2-10 (POWER) |
| Input | Start | ON or L 2-6 |
| | Reset | ON or L 2-7 |
| | Gate | ON or L 2-5 |
| Delayed Contact | (NC) | 1-4, 8-11 |
| | (NO) | 1-3, 9-11 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |
| Set Time | | |

Operation



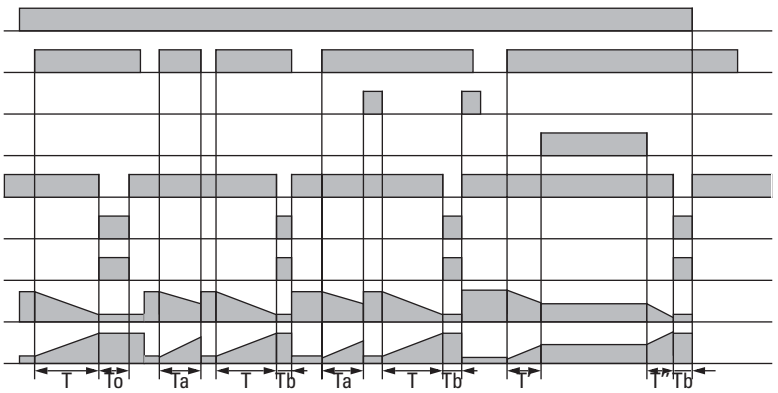

**ON-Delay One-Shot 2**

Time Remaining 3

Time Elapsed 3

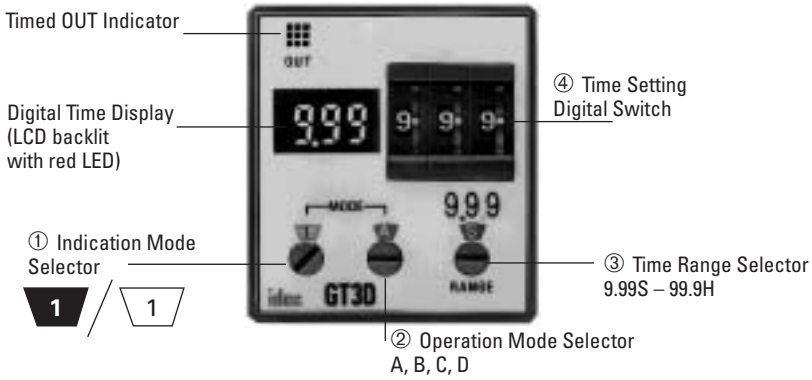
| Item | | Terminal No. |
|---|---|---|
| Power | | 2-10 (POWER) |
| Input | Start | ON or L 2-6 |
| | Reset | ON or L 2-7 |
| | Gate | ON or L 2-5 |
| Delayed Contact | (NC) | 1-4, 8-11 |
| | (NO) | 1-3, 9-11 |
| Indicator | | OUT |
| Digital Time Display | | DOWN |
| | | UP |
| Set Time | | |

Operation




G Timers

## Instructions: Setting GT3D-2, GT3D-3 Timers



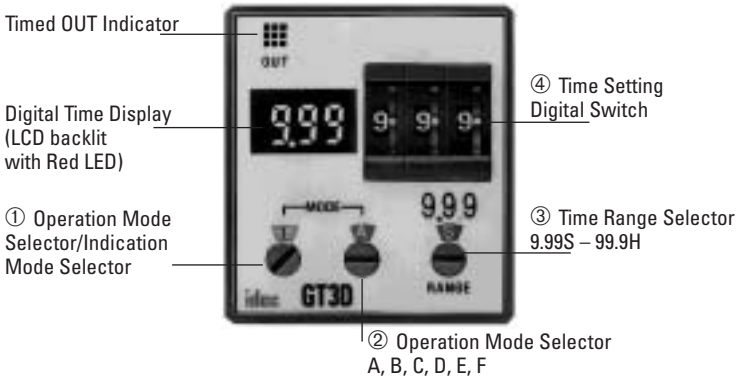

| Step 1 | Desired Mode/Selection | | | | Remarks |
|---|---|---|---|---|---|
| | **Time Display Mode** | **① Indicator Mode Selector** | **Operation Mode** | **② Operation Mode Selector** | |
| **Select the desired time display and operation modes.** | Time elapsed | 1 | ON-delay 1 | A | 1. Use the flat screwdriver to set the selectors. Since selectors do not turn all the way around, both clockwise and counterclockwise rotation may be necessary.<br><br>2. The ① Indicator Mode Selector determines whether the Digital Time Display shows the time elapsed or time remaining. The ② Operation Mode Selector determines the desired operation mode. Decide which display and mode is desired, then use these two selectors①② to set the operation mode.<br><br>3. The ② Operation Mode Selector has two blank modes which are not intended for use. Always have this selector set to A, B, C, or D. |
| | Time remaining | 1 | | A | |
| | Time elapsed | 1 | Interval | B | |
| | Time remaining | 1 | | B | |
| | Time elapsed | 1 | Cycle 1 | C | |
| | Time remaining | 1 | | C | |
| | Time elapsed | 1 | Cycle 3 | D | |
| | Time remaining | 1 | | D | |

| Step 2 | Desired Operation | Selection | | Remarks |
|---|---|---|---|---|
| | **Base Time Ranges** | **③ Time Range Selector** | | |
| | | **Decimal Point Indicator** | **Time Increment Indicator** | |
| **Select a time range that contains the desired period of time.** | 0.01 seconds to 9.99 seconds | 9.99 | S | 1. The ③ Time Range Selector controls both the decimal point indicator (9.99, 99.9, 999) and the time increment indicators S (seconds), M (minutes), and H (hours).<br><br>2. Chose which base time range contains the targeted timer setting. Then use the ③ Time Range Selector to set the decimal point indicator and time increment indicator to its corresponding pair of settings.<br><br>3. Since these configurations offer a complete range of settings from 0.01 seconds to 99.9 hours, the setting of 9.99 for minutes and the 9.99 and 999 settings for hours are not listed and should not be used. |
| | 0.1 seconds to 99.9 seconds | 99.9 | S | |
| | 1 second to 999 seconds | 999 | S | |
| | 0.1 minutes to 99.9 minutes | 99.9 | M | |
| | 1 minute to 999 minutes | 999 | M | |
| | 0.1 hours to 99.9 hours | 99.9 | H | |

| Step 3 | Desired Operation | Selection | Remarks |
|---|---|---|---|
| **Set the precise period of time desired by using the ④ Time Setting Digital Switch.** | | | Use the ④ Time Setting Digital Switch to set the desired period of time. It is important to remember that the setting of the ③ Time Range Selector determines the units of time measurement as well as the implied decimal point location. |

*It is important to remember that the ③ Time Range Selector not only selects the time range but also influences the interpretation of the Digital Time Display. Changing the ③ Time Range Selector setting changes the units of time measurement (seconds, minutes, hours) as well as the decimal point location.*

## Instructions: Setting GT3D-4 Timers



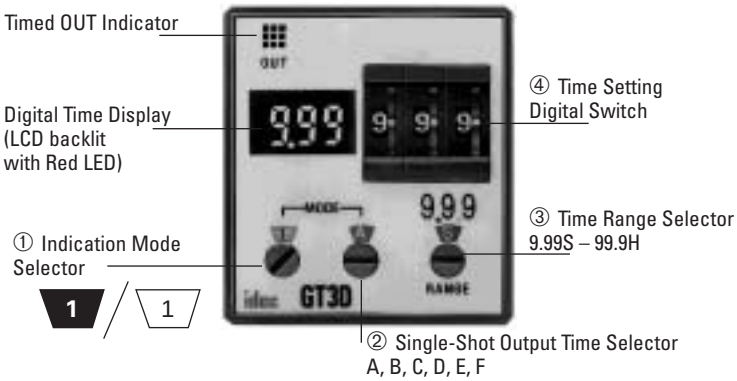

| Step 1 | Desired Mode/Selection | | | | Remarks |
|---|---|---|---|---|---|
| | Time Display Mode | ① Indicator Mode Selector | Operation Mode | ② Operation Mode Selector | 1. Use a flat screwdriver to set the selectors. Since selectors do not turn all the way around, both clockwise and counterclockwise rotation is necessary.<br><br>2. The ① Indicator Mode Selector determines whether the Digital Time Display shows the time elapsed or time remaining. The ② Operation Mode Selector determines the desired operation mode. Decide which display and mode is desired; then use these two selectors①② to set the operation mode.<br><br>3. When using the indicator mode setting "1," the ② Operation Mode Selector has two blank modes which are not intended for use. When using mode setting "1," always have the operation mode selector set to A, B, C, or D. |
| **Select the desired time display and operation modes.** | Time elapsed | 1 | ON-delay 1<br>Interval 1<br>Cycle 1<br>D: Cycle 3 | A<br>B<br>C<br>D | |
| | Time remaining | 1 | | | |
| | Time elapsed | 2 | ON-delay 2<br>Cycle 2<br>Signal ON/OFF-delay 2<br>Signal OFF-delay 1<br>Interval 2<br>One-shot cycle | A<br>B<br>C<br>D<br>E<br>F | |
| | Time remaining | 2 | | | |
| | Time elapsed | 3 | Signal ON/OFF-delay 2<br>Signal OFF-delay 2<br>One-shot 1<br>One-shot ON-delay<br>One-shot 2<br>Signal ON/OFF-delay 3 | A<br>B<br>C<br>D<br>E<br>F | |
| | Time remaining | 3 | | | |

| Step 2 | Desired Operation | Selection | | Remarks |
|---|---|---|---|---|
| | Base Time Ranges | ③ Time Range Selector | | 1. The ③ Time Range Selector controls both the decimal point indicator (9.99, 99.9, 999) and the time increment indicator: S (seconds), M (minutes), and H (hours).<br><br>2. Choose the base time range which contains the targeted timer setting. Then use the ③ Time Range Selector to set the decimal point indicator and time increment indicator to its corresponding pair of settings.<br><br>3. Since these configurations offer a complete range of settings from 0.01 seconds to 99.9 hours, the setting of 9.99 for minutes and the 9.99 and 999 settings for hours are not listed and should not be used. |
| | | Decimal Point Indicator | Time Increment Indicator | |
| **Select a time range that contains the desired period of time.** | 0.01 seconds to 9.99 seconds | 9.99 | S | |
| | 0.1 seconds to 99.9 seconds | 99.9 | | |
| | 1 seconds to 999 seconds | 999 | | |
| | 0.1 minutes to 99.9 minutes | 99.9 | M | |
| | 1 minute to 999 minutes | 999 | | |
| | 0.1 hours to 99.9 hours | 99.9 | H | |

| Step 3 | Desired Operation | Selection | Remarks |
|---|---|---|---|
| **Select the desired period of time by using the ④Time Setting Digital Switch.** | | | Use the ④ Time Setting Digital Switch to set the desired period of time. It is important to remember that the setting of the ③ Time Range Selector determines the units of time measurement as well as the implied decimal point location. |

*It is important to remember that the ③ Time Range Selector not only selects the time range, but also influences the interpretation of the Digital Time Display. Changing the ③ Time Range Selector setting changes the units of time measurement (seconds, minutes, hours) as well as the implied decimal point location.*

## Instructions: Setting GT3D-8 Timers




| Step 1 | Desired Mode of Operation | | Selection | Remarks |
|---|---|---|---|---|
| | **Operation Mode** | **Time Display Mode** | **① Indicator Mode Selector** | |
| **Select the time display and operation modes.** | ON-Delay One-Shot | Time elapsed | 1 | 1. Use a flat screwdriver to set the selectors. Since selectors do not turn all the way around, both clockwise and counterclockwise rotation is necessary.<br><br>2. The GT3D-8 ① Indicator Mode Selector selects both whether the Digital Time Display displays the time elapsed or time remaining and also the mode of operation. Decide which display and mode is desired. Then use this selector to set the operation mode. |
| | | Time remaining | **1** | |
| | Cycle one-shot | Time elapsed | 2 | |
| | | Time remaining | **2** | |
| | ON-delay one-shot 2 | Time elapsed | 3 | |
| | | Time remaining | **3** | |

| Step 2 | Desired Mode of Operation | Selection | Remarks |
|---|---|---|---|
| | **Desired Single-Shot Output Time** | **② Single-Shot Output Time Selector** | |
| **Select the single shot output time.** | 0.1 seconds | A | On the GT3D-8 timers, the desired single-shot output time can be selected from the A, B, C, D, E, and F modes using the ② One-Shot Output Time Selector. |
| | 0.5 seconds | B | |
| | 1 second | C | |
| | 5 seconds | D | |
| | 10 seconds | E | |
| | 50 seconds | F | |

| Step 3 | Desired Mode of Operation | Selection | | Remarks |
|---|---|---|---|---|
| | **Base Time Ranges** | **③ Time Range Selector** | | 1. The ③ Time Range Selector controls both the decimal point indicator (9.99, 99.9, 999) and the time increment indicator: S (seconds), M (minutes), and H (hours).<br><br>2. Chose which base time range contains the targeted timer setting. Then use the ③ Time Range Selector to set the decimal point indicator and time increment indicator to its corresponding pair of settings.<br><br>3. Since these configurations offer a complete range of settings from 0.01s to 99.9 hours, the setting of 9.99 for minutes and the 9.99 and 999 settings for hours are not listed and should not be used. |
| | | **Decimal Point Indicator** | **Time Increment Indicator** | |
| **Select the time range that contains the desired period of time.** | 0.01 seconds to 9.99 seconds | 9.99 | **S** | |
| | 0.1 seconds to 99.9 seconds | 99.9 | | |
| | 1 second to 999 seconds | 999 | | |
| | 0.1 minutes to 99.9 minutes | 99.9 | **M** | |
| | 1 minute to 999 minutes | 999 | | |
| | 0.1 hours to 99.9 hours | 99.9 | **H** | |

| Step 4 | Desired Mode of Operation | Selection | Remarks |
|---|---|---|---|
| **Select the desired period of time by using the ④ Time Setting Digital Switch.** | | | Use the ④ Time Setting Digital Switch to set the desired period of time. It is important to remember that the setting of the ③ Time Range Selector selects the units of time measurement as well as the implied decimal point location. |

*It is important to remember that the ③ Time Range Selector not only selects the time range, but also influences the interpretation of the Digital Time Display. Changing the ③ Time Range Selector setting changes the units of time measurement (seconds, minutes, hours) as well as the decimal point location.*

# GT3F Series — True OFF Delay Timers

**Key features of the GT3F series include:**

- **Mountable in sockets or flush panel**
- **"True" power OFF-delay up to 10 minutes**
- **No external control switch necessary**
- **Available with reset inputs**

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File No. E55996

CE



## Specifications

| | GT3F-1 | GT3F-2 |
|---|---|---|
| **Operation** | True power OFF-delay | |
| **Time Range** | 0.05 seconds to 600 seconds | |
| **Rated Voltage** | 100 to 240V AC, 50/60Hz<br>24V AC/DC | |
| **Contact Rating** | 250V AC/30V DC, 5A (resistive load) | 250V AC/30V DC, 3A (resistive load) |
| **Contact Form** | SPDT | DPDT |
| **Minimum Power Application Time** | 1 second | |
| **Voltage Tolerance** | AF20: 100 to 240V AC<br>AD24: 21.6 to 26.4VDC, 20.4 to 26.4VAC | |
| **Repeat Error** | ±0.2%, ±10 msec | |
| **Voltage Error** | ±0.2%, ±10 msec | |
| **Temperature Error** | ±0.2%, ±10 msec | |
| **Setting Error** | ±10% maximum | |
| **Insulation Resistance** | 100MΩ minimum | |
| **Dielectric Strength** | Between power and output terminals:<br>2,000V AC, 1 minute (SPDT)<br>1,500V AC, 1 minute (DPDT)<br>Between contacts on different poles:<br>1,000V AC, 1 minute (DPDT)<br>Between contacts of the same pole:<br>750V AC, 1 minute | |
| **Power Consumption** | AF20: 3.7VA (200V AC, 60Hz)<br>AD24: 0.8W (DC), 1.2VA (AC) | |
| **Mechanical Life** | 20,000,000 operations minimum | |
| **Electrical Life** | 100,000 operations minimum | |
| **Vibration Resistance** | 100m/sec$^2$ (approximate 10G) | |
| **Shock Resistance** | Operating extremes:<br>100 m/sec$^2$ (approximate 10G)<br>Damage limits: 500 m/sec$^2$ (approximate 50G) | |
| **Operating Temperature** | –10 to +50°C | |
| **Storage Temperature** | –30 to +80°C | |
| **Operating Humidity** | 45 to 85% RH | |
| **Weight** (approximate) | 77g | 79g |

*1. An inrush current flows during the minimum power application time. AF20: approximate 0.3A, AD24: approximate 0.6A*

*2. GT3F does not read the preset time range shown on the knob after power is turned off. Note that minimizing the preset time, by turning the knob to zero, does not shorten the delay time after power is removed.*

**GT3F Table of Contents**

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## Part Numbering List

**Part Numbers: GT3F**

| Mode of Operation | Rated Voltage Code | Time Range | Output | Contact | Optional Input | Complete Part Number | |
|---|---|---|---|---|---|---|---|
| | | | | | | 8-Pin | 11-Pin |
| Power OFF-delay | AF20: 100 to 240VAC (50/60Hz)<br>AD24: 24V AC/DC | 0.05 seconds to 600 seconds | 250V AC, 5A, 30V DC, 5A (resistive load) | Delayed SPDT | Reset | GT3F-1AF20 | GT3F-1EAF20 |
| | | | | | | GT3F-1AD24 | GT3F-1EAD24 |
| | | | 250V AC, 3A, 30V DC, 3A (resistive load) | Delayed DPDT | None (8p)<br>Reset (11p) | GT3F-2AF20 | GT3F-2EAF20 |
| | | | | | | GT3F-2AD24 | GT3F-2EAD24 |

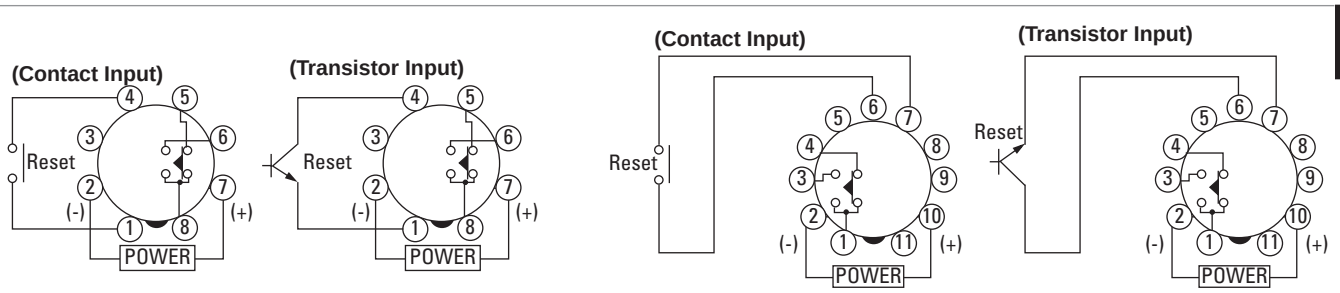
*1. Optional reset input resets the contact to the OFF state before time out.*

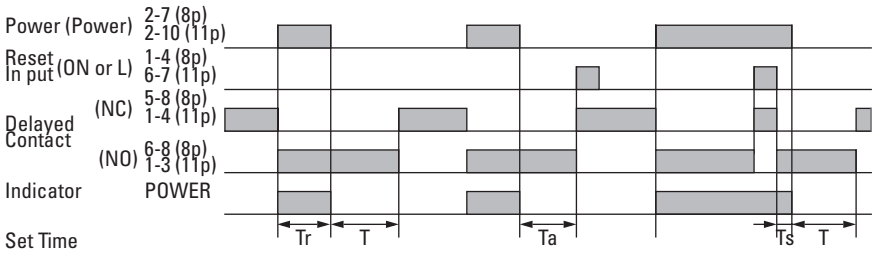
## Timing Diagrams/Schematics

### GT3F-1 Timing Diagrams

**GT3F-1 (8-pin)** | **GT3F-1E (11-pin)**

**Delayed SPDT Output, with Reset Input**




T = Set Time
Ta = Shorter than Set Time
Ts = 1 Second
Tr = Minimum Power Application Time

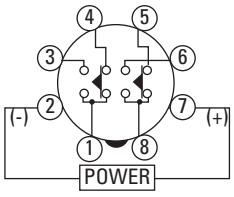
• GT3F-1: 1 Second

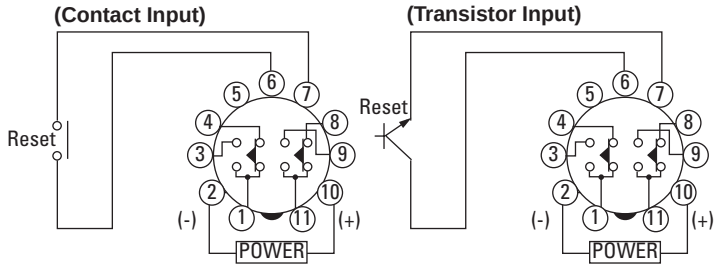
*2. For time ranges, see page G-39.*
*3. For sockets and accessory part numbers, see page G-48.*
*4. When power is applied, the NO output contact closes. When power is removed, the timing period begins. When time has elapsed, the NO contact opens.*
*5. For the timing diagram overview, see page G-4.*

## GT3F-2 Timing Diagrams

| GT3F-2 (8-pin) | GT3F-2E (11-pin) |
|---|---|

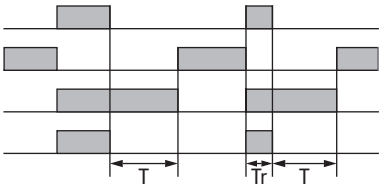
### Delayed DPDT Output




**8-Pin Type**

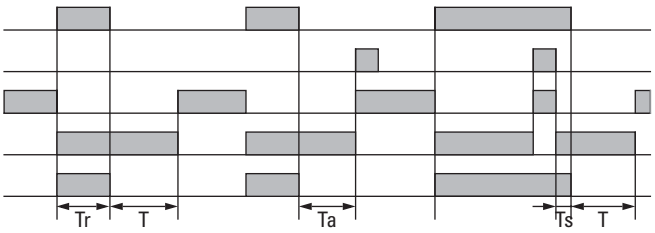
| Item | Terminal No. |
|---|---|
| Power (Power) | 2-7 |
| Delayed Contact (NC) | 1-4, 5-8 |
| Delayed Contact (NO) | 1-3, 6-8 |
| Indicator | POWER |
| Set Time | |




T = Set Time
Tr = Minimum Power Application Time: 1 Second

**11-Pin Type**

| Item | Terminal No. |
|---|---|
| Power (Power) | 2-10 |
| Reset In put (ON or L) | 6-7 (11p) |
| Delayed Contact (NC) | 1-4, 8-11 |
| Delayed Contact (NO) | 1-3, 9-11 |
| Indicator | POWER |
| Set Time | |




T = Set Time
Ta = Shorter than Set Time
Ts = 1 Second
Tr = Minimum Power Application Time: 1 Second

When power is applied, the NO contact closes. When power is removed, the timing period begins. When time has elapsed, the NO contact opens. Optional reset input will return contacts to original state before time elapses.

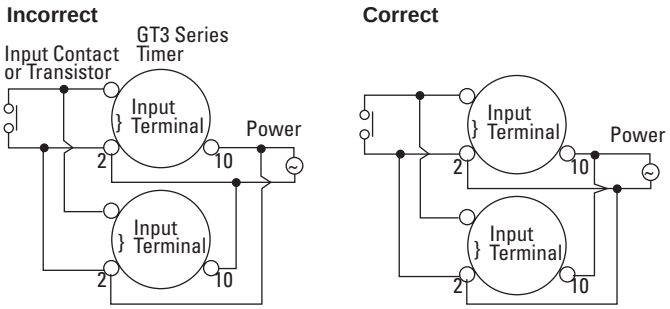
## Instructions: Setting GT3F Timers

| Steps | Desired Operation | Selection | | Remarks |
|---|---|---|---|---|
| | **Base Time Ranges** | **① Dial Selector** | **② Time Range Selector** | |
| **1. Select a time range that contains the desired period of time.** | 0.05s to 1s | 0 to 1 | 1S | Time range can be selected from 1S and 10S using a flat screwdriver and five different dials of 0 to 1, 0 to 3, 0 to 6, 0 to 18, and 0 to 60 are displayed in the six windows by turning the Dial Selector, allowing for selecting the best suited scale. Note that the switch does not turn infinitely. |
| | 0.05s to 3s | 0 to 3 | | |
| | 0.05s to 6s | 0 to 6 | | |
| | 0.1s to 10s | 0 to 1 | 10S | |
| | 0.3s to 30 | 0 to 3 | | |
| | 0.6s to 60 | 0 to 6 | | |
| | 1.8s to 180s | 0 to 18 | | |
| | 6s to 600s | 0 to 60 | | |
| **2. The set time is selected by turning the ③ Setting Knob.** | | | | Setting Examples:<br><br>1) When the Setting Knob ③ is set at 2.5, with Dial Selector ① 0 to 3 and Time Range Selector ② 1S selected, then the set time is 2.5 seconds.<br><br>2) When the Setting Knob ③ is set at 5.0, with Dial Selector ① 0 to 60 and Time Range Selector ② 10S selected, then the set time is 500 seconds. |

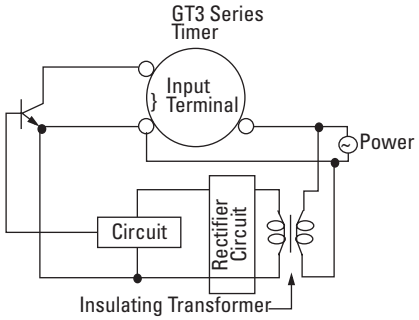
## Instructions: Wiring Inputs

### Inputs of GT3F

To avoid electric shock, do not touch the input signal terminal during power voltage application. Never apply the input signals to two or more GT3F timers using the same contact or transistor.




In a transistor circuit for controlling input signals, with its primary and secondary power circuits isolated, do not ground the secondary circuit.



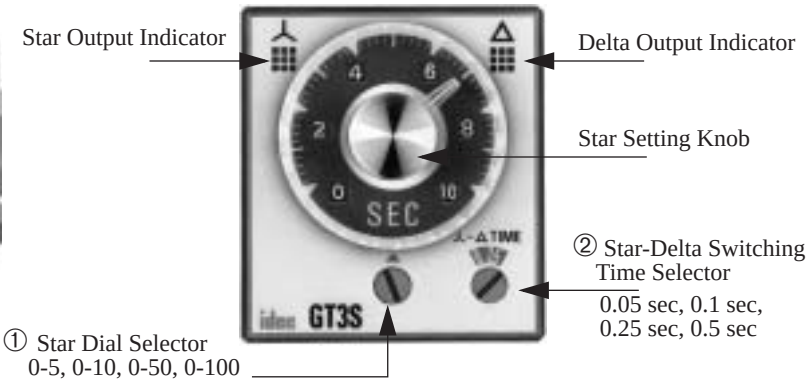

On the GT3F timers, connect the input signals to terminal No.1 and 4 only on the 8-pin type; connect the input signals to terminal No. 6 and 7 only on the 11-pin type. Never apply voltage to other terminals; otherwise, the internal circuit may be damaged.

Input signal lines must be made as short as possible and installed away from power cables and power lines. Use shielded wires or a separate conduit for input wiring.

The GT3F, consisting of a high-impedance circuit, may not be reset due to the influence of an inductive voltage or residual voltage caused by a leakage current. If not reset, connect an RC filter or bleeder resistor between power terminals so that the voltage between power terminals can be reduced to less than 15% of the rated voltage.

## GT3 (Star-Delta) Timers

### Star-Delta




| Operation Mode | Rated Input Voltage | Time Range | Output | Contact | Part No. 8-pin Type |
|---|---|---|---|---|---|
| Star-Delta | AF20: 100 to 240V AC (50/60Hz) | Star: 0.05 to 100 sec<br>Star-Delta switching time:<br>0.05 sec<br>0.1 sec<br>0.25 sec<br>0.5 sec | 250V AC/30V DC, 5A (resistive load) | Star: Delayed SPST-NO<br>Delta: Delayed SPST-NO | GT3S-1AF20 |
| | | | | Star: Delayed SPST-NO<br>Delta: Delayed SPST-NO<br>Instantaneous: SPST-NO | GT3S-2AF20 |

### Time Ranges:

| ① Star Dial Selector | | ② Star-Delta Switching Time Selector |
|---|---|---|
| Dial | Time Range | Time |
| 0-5 | 0.05 sec - 5 sec | 0.05 sec |
| 0-10 | 0.1 sec - 10 sec | 0.1 sec |
| 0-50 | 0.5 sec - 50 sec | 0.25 sec |
| 0-100 | 1 sec - 100 sec | 0.5 sec |

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File No. E55996

### Contact Ratings:

| Contact Ratings | | 250V AC/30V DC, 5A (resistive load) |
|---|---|---|
| Life | Mechanical | 20,000,000 operations minimum |
| | Electrical | 100,000 operations minimum (rated load) |

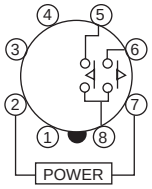
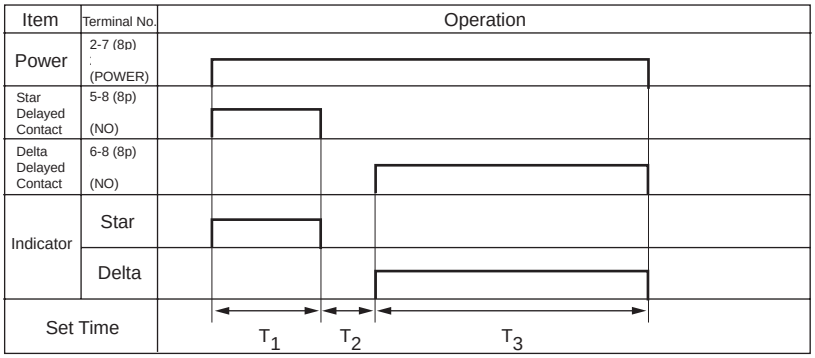
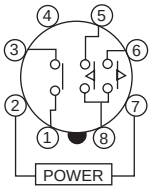
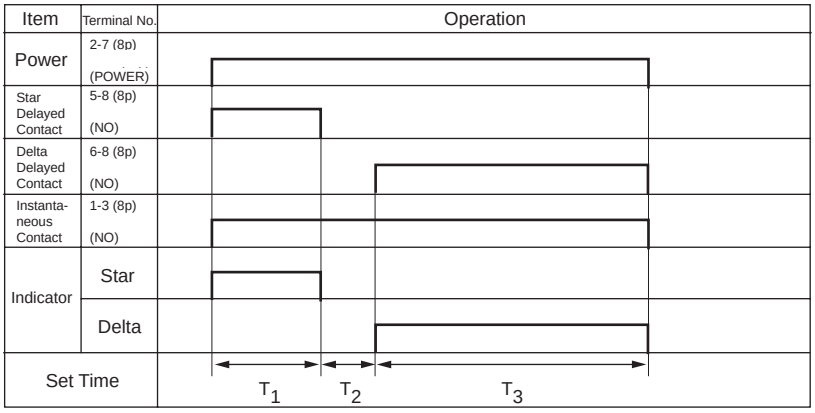
**GT3S Table of Contents**

Specifications — G-42
Operation Charts — G-43
GT3 Accessories — G-48
GT3 Instructions — G-50
GT3 Dimensions — G-52
Timing Diagrams Overview — G-4

## General Specifications

| | | |
|---|---|---|
| **Operation System** | | Solid state CMOS circuitry |
| **Operation Type** | | Star-delta |
| **Time Range** | | Star side: 0.05 to 100 sec<br>Star-delta switching time:<br>0.05, 0.1, 0.25, 0.5 sec |
| **Rated Operational Voltage** | | 100 to 240V AC (50/60Hz) |
| **Operating Temperature** | | -10 to +50˚C |
| **Storage Temperature** | | -30 to +80˚C |
| **Operating Humidity** | | 45 to 85% RH |
| **Voltage Tolerance** | | 85 to 264V AC |
| **Repeat Error** | | ±0.2%, ±10 msec |
| **Voltage Error** | | ±0.2%, ±10 msec |
| **Temperature Error** | | ±0.2%, ±10 msec |
| **Setting Error** | | ±10% maximum |
| **Reset Time** | | 500 msec maximum |
| **Insulation Resistance** | | 100MΩ minimum |
| **Dielectric Strength** | | Between power and output terminals: 2,000V AC, 1 minute<br>Between contacts of different poles: 2,000V AC, 1 minute<br>Between contacts of the same pole: 750V AC, 1 minute |
| **Vibration Resistance** | | 100 m/sec$^2$ (Approx. 10G) |
| **Shock Resistance** | | Operating extremes: 100m/sec$^2$ (Approx. 10G)<br>Damage limits: 500m/sec$^2$ (Approx. 50G) |
| **Power Consumption (Approx.)** | **Type GT3S-1** | 3.0VA (100V AC, 60Hz),<br>10.4VA (200V AC, 60Hz) |
| | **Type GT3S-2** | 4.0VA (100V AC, 60Hz),<br>12.0VA (200V AC, 60Hz) |

## Operation Charts

| Product Series | Internal Connection & Terminal Arrangement | Operation Chart |
|---|---|---|
| GT3S-1<br>Star: Delayed SPST-NO<br>Delta: Delayed SPST-NO | (8-pin Type)<br>  <br><br>5-8: Star contact<br>6-8: Delta contact |  <br><br>•The star delayed contact goes on when power is turned on and goes off after a set time for the star contact ($T_1$). The delta delayed contact goes on after star-delta switching time ($T_2$) and goes off when power is turned off.<br>$T_1$ = Star ON time (Set Time), $T_2$ = Star-delta switching time, $T_3$ = Delta ON time |
| GT3S-2<br>Star: Delayed SPST-NO<br>Delta: Delayed SPST-NO<br>Instantaneous SPST-NO | (8-pin Type)<br>  <br><br>5-8: Star contact<br>6-8: Delta contact |  <br><br>•The star delayed contact goes on when power is turned on and goes off after a set time for the star contact ($T_1$). The delta delayed contact goes on after star-delta switching time ($T_2$) and goes off when power is turned off.<br>•The intantaneous contact goes on when power is turned on and goes off when power is turned off.<br>$T_1$ = Star ON time (Set Time), $T_2$ = Star-delta switching time, $T_3$ = Delta ON time |

G Timers

# GT3W Series — Dual Time Range Timers

**Key features of the GT3W series include:**

- **Sequential start, sequential interval, on-delay, recycler, and interval ON timing functions**
- **2 time settings in one timer**
- **8 selectable operation modes on each model**
- **Mountable in sockets or flush panel**
- **Power and output status indicating LEDs**
- **Time ranges up to 300 hours**

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UL Listed
File No.E55996



| General Specifications | | | |
|---|---|---|---|
| **Operation System** | | | Solid state CMOS Circuit |
| **Operation Type** | | | Multi-Mode |
| **Time Range** | | | 1: 0.1sec to 6hours, 3: 0.1sec to 300hours |
| **Pollution Degree** | | | 2 (IE60664-1) |
| **Over voltage category** | | | III (IE60664-1) |
| **Rated Operational Voltage** | | AF20 | 100-240V AC(50/60Hz) |
| | | AD24 | 24V AC(50/60Hz)/24V DC |
| | | D12 | 12V DC |
| **Voltage Tolerance** | | AF20 | 85-264V AC(50/60Hz) |
| | | AD24 | 20.4-26.4V AC(50/60Hz)/21.6-26.4V DC |
| | | D12 | 10.8-13.2V DC |
| **Disengaging value of Input Voltage** | | | Rated Voltage x10% minimum |
| **Range of Ambient Operating Temperature** | | | -10 to +50ºC (without freezing) |
| **Range of Ambient Storage and Transport Temperature** | | | -30 to +75ºC (without freezing) |
| **Range of Relative Humidity** | | | 35 to 85%RH (without condensation) |
| **Atmospheric Pressure** | | | 80kPa to 110kPa (Operating), 70kPa to 110kPa (Transport) |
| **Reset Time** | | | 60msec maximum |
| **Repeat Error** | | | ±0.2%, ±10msec* |
| **Voltage Error** | | | ±0.2%, ±10msec* |
| **Temperature Error** | | | ±0.6%, ±10msec* |
| **Setting Error** | | | ±10% maximum |
| **Insulation Resistance** | | | 100MΩ minimum (500V DC) |
| **Dielectric Strength** | | | Between power and output terminals: 2000V AC, 1 minute<br>Between contacts of different poles: 2000V AC, 1 minute<br>Between contacts of the same pole:750V AC, 1 minute |
| **Vibration Resistance** | | | 10 to 55Hz amplitude 0.75mm2 hours in each of 3 axes |
| **Shock Resistance** | | | Operating extremes: 98m/sec$^2$ (approx.10G)<br>Damage limits: 490m/sec$^2$ (approx. 50G)<br>3 times in each of 3 axes |
| **Degree of Protection** | | | IP40 (enclosure), IP20 (socket) (IEC60529) |
| **Power Consumption (Approx.)** | AF20 | 100V AC/60Hz | 2.3VA |
| | | 200V AC/60Hz | 4.6VA |
| | AD24 (AC/DC) | | 1.8VA/0.9W |
| **Mounting Position** | | | Free |
| **Dimensions** | | | 40Hx 36W x 70 mm |
| **Weight (Approx.)** | | | 72g |

| Contact Ratings | | |
|---|---|---|
| **Allowable Contact Power** | | 960VA/120W |
| **Allowable Voltage** | | 250V AC/150V DC |
| **Allowable Current** | | 5A |
| **Maximum permissible operating frequency** | | 1800 cycles per hour |
| **Rated Load** | | 1/8HP, 240V AC |
| | | 3A, 240V AC (Resistive) |
| | | 5A, 120V AC/30V DC (Resistive) |
| **Conditional Short Circuit** | | Fuse 5A, 250V |
| **Life** | Electrical | 100,000 op. minimum (Resistive) |
| | Mechanical | 20,000,000 op. minimum |

*** For the value of the error against a preset time, whichever the largest.*

**GT3W Table of Contents**

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Part Number List — G-45
Timing Diagrams / Schematics — G-46
Instructions: Setting Timer — G-47
GT3 Accessories — G-48
GT3 Instructions — G-50
GT3 Dimensions — G-52
Timing Diagrams Overview — G-4

## Part Number List

### Part Numbers

| Mode of Operation | Output | Contact | Time Range* | Rated Voltage | Pin Configuration | New Part Numbers |
|---|---|---|---|---|---|---|
| A: Sequential Start<br>B: On-delay with course & fine<br>C: Recycler & instaneous<br>D: Recycler outputs (OFF Start)<br>E: Recycler outputs (ON Start)<br>F: Interval ON<br>G: Interval ON Delay<br>H: Sequential Interval | 3A, 240V AC<br>5A, 120V AC/30V DC (Resistive Load) | Delayed SPDT + Delayed SPDT | 1: 0.1sec - 6 hours<br>*(See Time Range Settings for details.) | 100 to 240V AC (50/60Hz) | 8 pin | GT3W-A11AF20N |
| | | | | | 11 pin | GT3W-A11EAF20N |
| | | | | 24V AC/DC | 8 pin | GT3W-A11AD24N |
| | | | | | 11 pin | GT3W-A11EAD24N |
| | | | | 12V DC | 8 pin | GT3W-A11D12N |
| | | | | | 11 pin | GT3W-A11ED12N |
| | | | 3: 0.1sec - 300 hours | 100 to 240V AC (50/60Hz) | 8 pin | GT3W-A33AF20N |
| | | | | 24V AC/DC | | GT3W-A33AD24N |

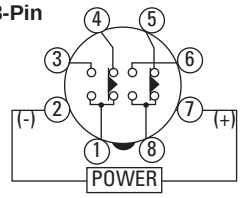
*1. For schematics, see page G-46.*
*2. For socket and accessory part number information, see page G-48.*
*3. 8- and 11-pin models differ only in the number of pins (extra pins are not used).*
*4. For the timing diagram overview, see page G-4.*
*5. *For details on setting time ranges, see the instructions on page G-47.*

## Time Range Table

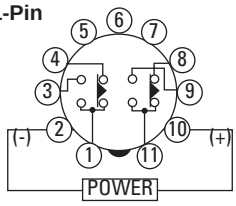
| Time Range Code: 1 | | | Time Range Code: 3 | | |
|---|---|---|---|---|---|
| Time Range Selector | Scale | Time Range | Time Range Selector | Scale | Time Range |
| 1S | 0-1 | 0.1 sec - 1 sec | 1S | 0 - 3 | 0.1 sec - 3 sec |
| 10S | | 0.3 sec - 10 sec | 1M | | 3 sec - 3 min |
| 10M | | 15 sec - 10 min | 1H | | 3 min - 3 hours |
| 1S | 0 - 6 | 0.1 sec - 6 sec | 1S | 0 - 30 | 0.6 sec - 30 sec |
| 10S | | 1 sec - 60 sec | 1M | | 36 sec - 30 min |
| 1M | | 6 sec - 6 min | 1H | | 36min - 30 hours |
| 10M | | 1 min - 60 min | 10H | | 6 hours - 300 hours |
| 1H | | 6 min - 6 hours | | | |

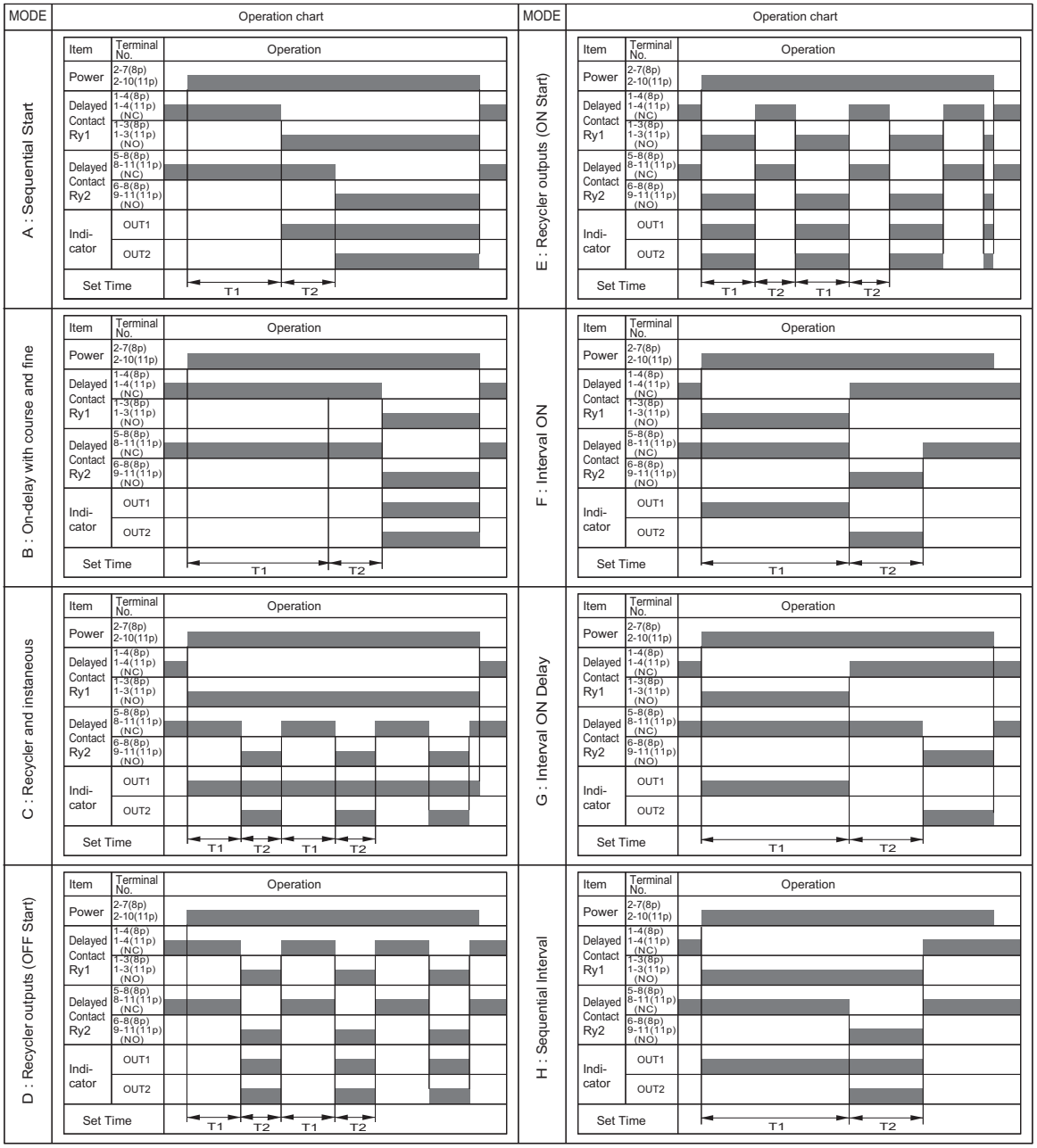
## Timing Diagrams/Schematics

**8-Pin**



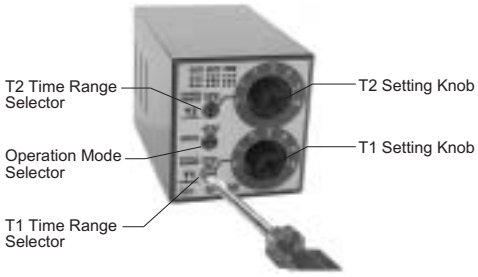

**11-Pin**




G-46 www.idec.com USA: (800) 262-IDEC or (408) 747-0550, Canada: (888) 317-IDEC

## Instructions: Setting GT3W Timer




1. The switches should be securely turned using a flat screwdriver 4mm wide (maximum). Note that incorrect setting may cause malfunction. The switches, which do not turn infinitely, should not be turned beyond their limits.
2. Since changing the setting during timer operation my cause malfunction, turn power off before changing.

## Safety Precautions

Special expertise is required to use Electronic Timers.

- All Electronic Timer modules are manufactured under IDEC's rigorous quality control system, but users must add a backup or fail safe provision to the control system when using the Electronic Timer in applications where heavy damage or personal injury may occur should the Electronic Timer fail.
- Install the Electronic Timer according to instructions described in this catalog.
- Make sure that the operating conditions are as described in the specifications. If you are uncertain about the specifications, contact IDEC in advance.
- In these directions, safety precautions are categorized in order of importance to Warning and Caution.

### Warning

Warning notices are used to emphasize that improper operation may cause sever personal injury or death.

- Turn power off to the Electronic timer before starting installation, removal, Wiring, maintenance, and inspection on the Electronic Timer.
- Failure to turn power off may cause electrical shocks or fire hazard.
- Emergency stop and interlocking circuits must be configured outside the Electronic timer. If such a circuit is configured inside the Electronic Timer, failure of the Electronic timer may cause malfunction of the control system, or an accident.

### Caution

Caution notices are used where inattention might cause personal injury or damage to equipment.

- The Electronic Timer is designed for installation in equipment. Do not install the Electronic Timer outside equipment.
- Install the Electronic Timer in environments described in the specifications. If the Electronic Timer is used in places where it will be subjected to high-temperature, high-humidity, condensation, corrosive gases, excessive vibrations, or excessive shocks, then electrical shocks, fire hazard, or malfunction could result.
- Use an IEC60127-approved fuse and circuit breaker on the power and output line outside the Electronic Timer.
- Do not disassemble, repair, or modify the Electronic Timer.
- When disposing of the Electronic Timer, do so as industrial waste.

# Accessories: GT3 Series

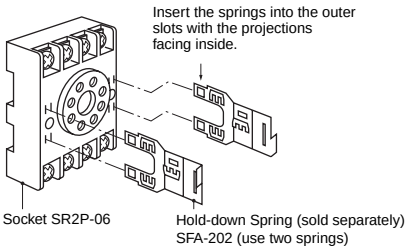
## DIN Rail Mounting Accessories

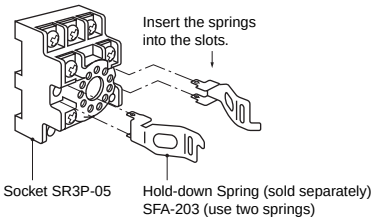
### Part Numbers: DIN Rail/Surface Mount Sockets and Hold-Down Springs

| DIN Rail Mount Socket | | | | Applicable Hold-Down Springs | |
|---|---|---|---|---|---|
| Style | Appearance | Use with Timers | Part No. | Appearance | Part No. |
| 8-Pin Screw Terminal (dual tier) | | GT3A-1, 2, 3 (8-pin)<br>GT3D-1, 2, 3 (8-pin)<br>GT3F-1, 2 (8-pin)<br>GT3W (8-pin)<br>GT3S | SR2P-05 | | SFA-203 |
| 11-Pin Screw Terminal (dual tier) | | GT3A-1, 2, 3 (11-pin)<br>GT3A-4, 5, 6<br>GT3D-1, 2, 3 (11-pin)<br>GT3D-4, 8<br>GT3F-1, 2 (11-pin)<br>GT3W (11-pin) | SR3P-05 | | |
| 8-Pin Fingersafe Socket | | GT3A-1, 2, 3 (8-pin)<br>GT3D-1, 2, 3 (8-pin)<br>GT3F-1, 2 (8-pin)<br>GT3W (8-pin)<br>GT3S | SR2P-05C | | |
| 11-Pin Fingersafe Socket | | GT3A-1, 2, 3 (11-pin)<br>GT3A-4, 5, 6<br>GT3D-1, 2, 3 (11-pin)<br>GT3D-4, 8<br>GT3F-1, 2 (11-pin)<br>GT3W (11-pin) | SR3P-05C | | |
| 8-Pin Screw Terminal | | GT3A-1, 2, 3 (8-pin)<br>GT3D-1, 2, 3 (8-pin)<br>GT3F-1, 2 (8-pin)<br>GT3W (8-pin)<br>GT3S | SR2P-06 | | SFA-202 |
| 11-Pin Screw Terminal | | GT3A-1, 2, 3 (11-pin)<br>GT3A-4, 5, 6<br>GT3D-1, 2, 3 (11-pin)<br>GT3D-4, 8<br>GT3F-1, 2 (11-pin)<br>GT3W (11-pin) | SR3P-06 | | |
| DIN Mounting Rail Length 1000mm | | — | BNDN1000 | | |

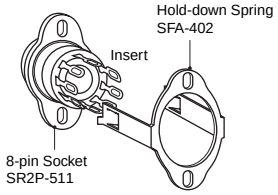
### Installation of Hold-Down Springs

**DIN Rail Mount Socket**




**Panel Mount Socket**



## Panel Mounting Accessories

### Part Numbers: Panel Mount Sockets and Hold-Down Springs

| Panel Mount Socket | | | | Applicable HD Springs | |
|---|---|---|---|---|---|
| Style | Appearance | Use with Timers | Part No. | Appearance | Part No. |
| 8-Pin Solder Terminal | | GT3A- (8-pin)<br>GT3D- (8-pin)<br>GT3W- (8-pin)<br>GT3F- (8-pin)<br>GT3S | SR2P-51 | | SFA-402 |
| 11-Pin Solder Terminal | | GT3A- (11-pin)<br>GT3D- (11-pin)<br>GT3W- (11-pin)<br>GT3F- (11-pin) | SR3P-51 | | |

*1. For information on installing the hold-down springs, see page G-48.*

### Part Numbers: Flush Panel Mount Adapter and Sockets that use an Adapter

| Accessory | Description | Appearance | Use with Timers | Part No. |
|---|---|---|---|---|
| **Panel Mount Adapter** | Adaptor for flush panel mounting GT3 timers | | All GT3 timers | RTB-G01 |
| **Sockets for use with Panel Mount Adapter** | 8-pin screw terminal | (Shown: SR6P-M08G for Wiring Socket Adapter) | All 8-pin timers | SR6P-M08G |
| | 11-pin screw terminal | | All 11-pin timers | SR6P-M11G |
| | 8-pin solder terminal | | All 8-pin timers | SR6P-S08 |
| | 11-pin solder terminal | | All 11-pin timers | SR6P-S11 |

*2. No hold down springs are available for flush panel mounting.*

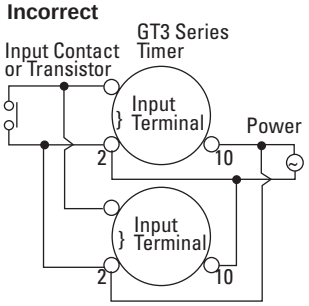
G Timers

# Instructions: Wiring Inputs for GT3 Series

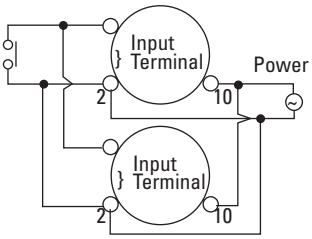
## Inputs

To avoid electric shock, do not touch the input signal terminal during power voltage application.
When connecting the input signal terminals of two or more GT3A timers to the same contact or transistor, the input terminals of the same number should be connected. (Connect Terminals No.2 in common.)

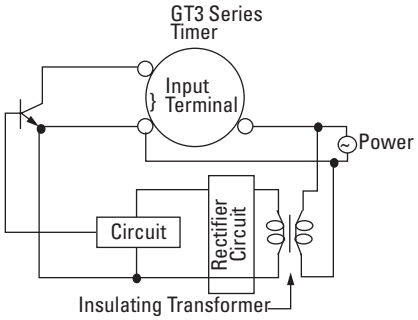
**Incorrect**



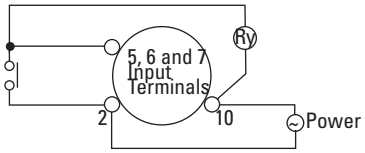

**Correct**




In a transistor circuit for controlling input signals, with its primary and secondary power circuits isolated, do not ground the secondary circuit.



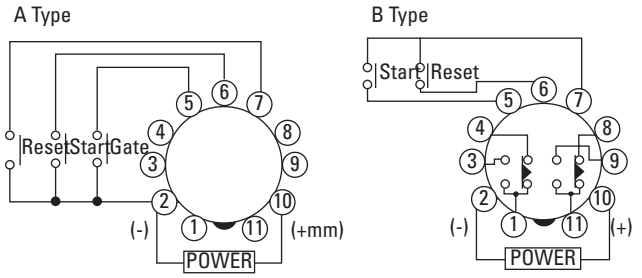

Connect the input signal terminals of the GT3A timers to Terminal No.2 only. Never apply voltage to other terminals; otherwise, the internal circuit may be damaged.



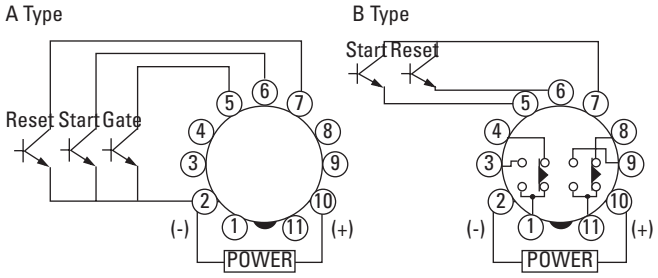

Input signal lines must be made as short as possible and installed away from power cables and power lines. Use shielded wires or a separate conduit for input wiring.

## Inputs Instructions: continued

For contact input, use highly reliable gold-plated contacts to make sure that the residual voltage is less than 1V when the contacts are closed.

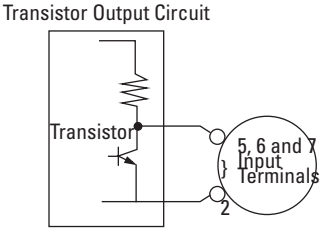



For transistor input, use transistors with the following specifications; $V_{CE}$ = 40V, $V_{CES}$ = 1V or less, $I_C$ = 50 mA or more, and $I_{CBO}$ = 50µA or less. The resistance should be less than 1kΩ when the transistor is on. When the output transistor switches on, a signal is input to the timer.




### Inputs: GT3A-1, -2, -3

Transistor output equipment such as proximity switches and photoelectric switches can input signals if they are voltage/current output type, with power voltage ranges from 18 to 30V and have1V. When the signal voltage switches from H to L, a signal is input to the timer.

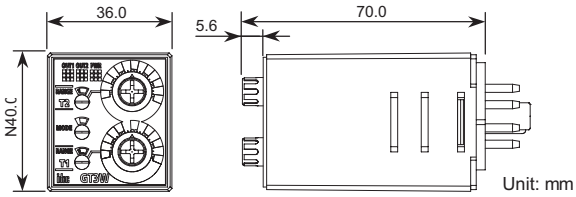



### Inputs: GT3A-4, -5, -6

| | | |
|---|---|---|
| **Start Input** | The start input initiates a time-delay operation and controls output status. | No-voltage contact inputs and NPN open collector transistor inputs are applicable.<br>24V DC, 1mA maximum<br>Input response time: 50msec maximum |
| **Reset Input** | When the reset input is activated, the time is reset, and contacts return to original state. | |
| **Gate Input** | The time-delay operation is suspended while the gate input is on (pause). | |

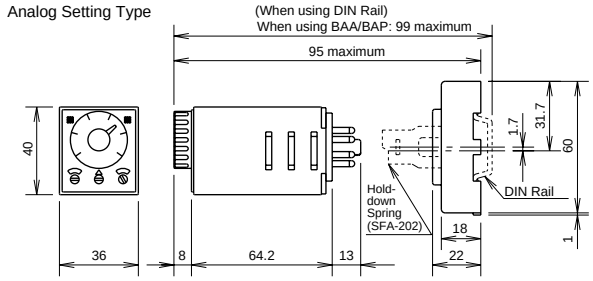
G
Timers

## Dimensions: GT3 Series

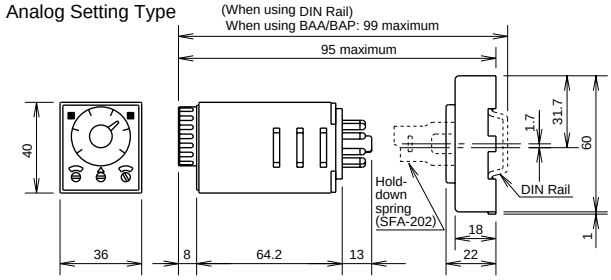



NOTE: GT3W series are UL Listed when used in combination with following IDEC's sockets:
GT3W-A11, A33: SR2P-06* pin type socket.
GT3W-A11E, A33: SR3P-05* pin type socket.
(*-May be followed by A,B,C or U)
The socket to be used with these timers are rated:
-Conductor Temperature Rating 60ºC min.
-Use 14AWG max.(2mm²max.) Copper conductors only
-Terminal Torque 1.0 to 1.3 N-m

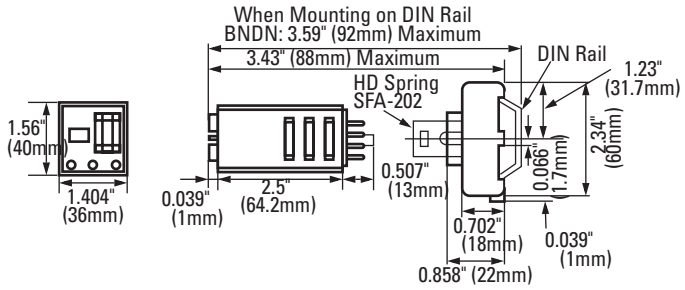
### Analog GT3 Timer, 8-Pin with SR2P-06



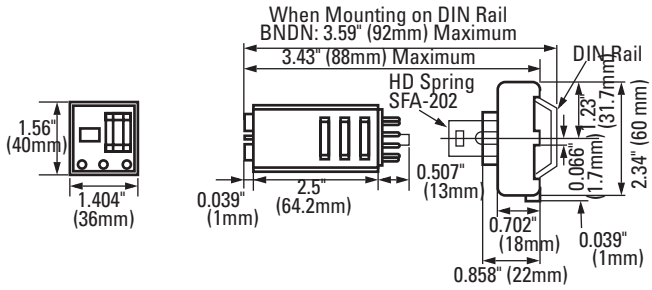

### Analog GT3 Timer, 11-Pin with SR3P-06



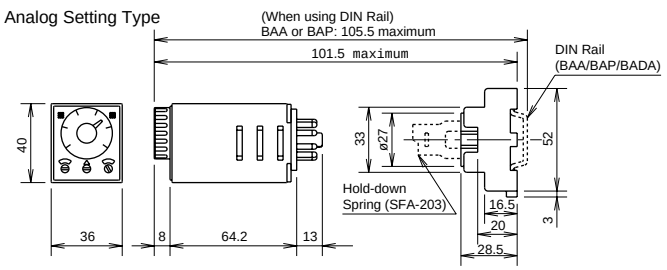

### Digital GT3 Timer, 8-Pin with SR2P-06



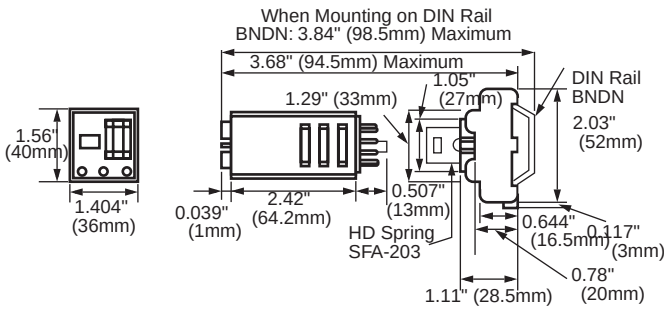

### Digital GT3 Timer, 11-Pin with SR3P-06




### Analog GT3 Timer, 11-Pin with SR3P-05

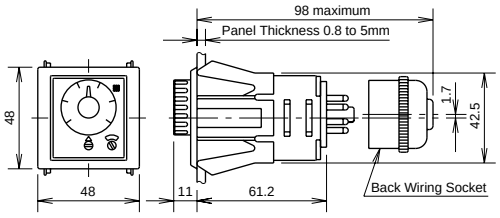



### Digital GT3 Timer, 11-Pin with SR3P-05

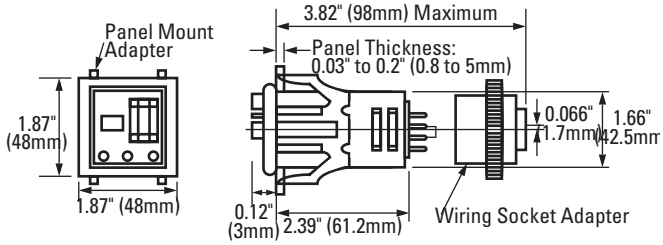


## Panel Mount Adapter

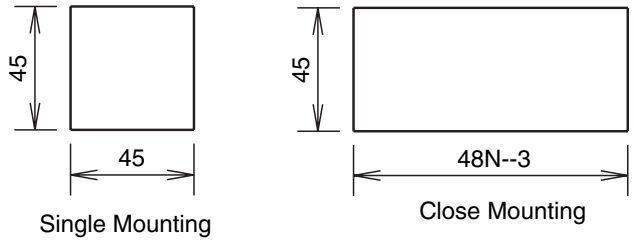
**Analog GT3 Timer, 8-Pin and 11-Pin with SR6P-S08 or SR6P-S11**



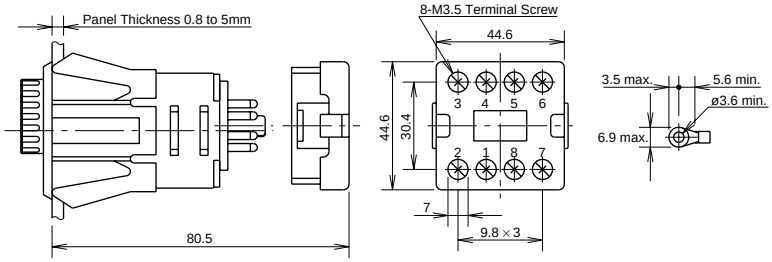

**Digital GT3 Timer, 8-Pin and 11-Pin with SR6P-S08 or SR6P-S11**



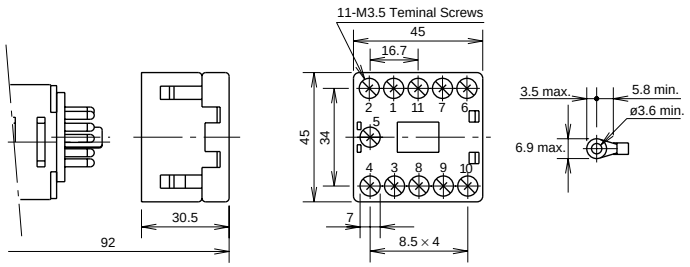

## Mounting Hole Layout




**Analog and Digital GT3 Timer, 8-Pin with SR6P-M08G**




**Analog and Digital GT3 Timer, 11-Pin with SR6P-M11G**



## General Instructions for All Timer Series

### Load Current

With inductive, capacitive, and incandescent lamp loads, inrush current more than 10 times the rated current may cause welded contacts and other undesired effects. The inrush current and steady-state current must be taken into consideration when specifying a timer.

### Contact Protection

Switching an inductive load generates a counter-electromotive force (back EMF) in the coil. The back EMF will cause arcing, which may shorten the contact life and cause imperfect contact. Application of a protection circuit is recommended to safeguard the contacts.

### Temperature and Humidity

Use the timer within the operating temperature and operating humidity ranges and prevent freezing or condensation. After the timer has been stored below its operating temperature, leave the timer at room temperature for a sufficient period of time to allow it to return to operating temperatures before use.

### Environment

Avoid contact between the timer and sulfurous or ammonia gases, organic solvents (alcohol, benzine, thinner, etc.), strong alkaline substances, or strong acids. Do not use the timer in an environment where such substances are prevalent. Do not allow water to run or splash on the timer.

### Vibration and Shock

Excessive vibration or shocks can cause the output contacts to bounce, the timer should be used only within the operating extremes for vibration and shock resistance. In applications with significant vibration or shock, use of hold down springs or clips is recommended to secure a timer to its socket.

### Time Setting

The time range is calibrated at its maximum time scale; so it is desirable to use the timer at a setting as close to its maximum time scale as possible. For a more accurate time delay, adjust the control knob by measuring the operating time with a watch before application.

### Input Contacts

Use mechanical contact switch or relay to supply power to the timer. When driving the timer with a solid-state output device (such as a two-wire proximity switch, photoelectric switch, or solid-state relay), malfunction may be caused by leakage current from the solid-state device. Since AC types comprise a capacitive load, the SSR dielectric strength should be two or more times the power voltage when switching the timer power using an SSR.

Generally, it is desirable to use mechanical contacts whenever possible to apply power to a timer or its signal inputs. When using solid state devices, be cautious of inrushes and back-EMF that may exceed the ratings on such devices. Some timers are specially designed so that signal inputs switch at a lower voltage than is used to power the timer (models designated as "B" type).



## Timing Accuracy Formulas

Timing accuracies are calculated from the following formulas:

**Repeat Error**

$$= \pm \frac{1}{2} \times \frac{\text{Maximum Measured Value} - \text{Minimum Measured Value}}{\text{Maximum Scale Value}} \times 100\%$$

**Voltage Error**

$$= \pm \frac{Tv - Tr}{Tr} \times 100\%$$

$T_V$: Average of measured values at voltage V
$T_r$: Average of measured values at the rated voltage

**Temperature Error**

$$= \pm \frac{Tt - T20}{T20} \times 100\%$$

$T_t$: Average of measured values at °C
$T_{20}$: Average of measured values at 20°C

**Setting Error**

$$= \pm \frac{\text{Average of Measured Values} - \text{Set Value}}{\text{Maximum Scale Value}} \times 100\%$$