

## GT3A Series – Analog Timers

### 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
<b>Operation</b>	Multi-mode			Multi-mode with inputs (11 pins)
<b>Time Range</b>	0.1s to 180 hours			
<b>Rated Voltage</b>	100 to 240V AC, 50/60Hz 12V DC 24V AC, 50/60Hz / 24V DC			
<b>Contact Ratings</b>	125V AC/250V AC, 3A; 30V DC, 1A (resistive load)		125V AC/250V AC, 5A; 30V DC, 5A (resistive load)	
<b>Minimum Applicable Load</b>	5V, 10mA (reference value)			
<b>Voltage Tolerance</b>	AF20 (100V AC): 85 to 264V AC AD24: 20.4 to 26.4V AC/21.6 to 26.4V DC D12: 10.8 to 13.2V DC			
<b>Error</b>	±0.2%, ±10 msec (repeat, voltage, temperature)			
<b>Setting Error</b>	±10% maximum			
<b>Reset Time</b>	60msec maximum			
<b>Insulation Resistance</b>	100MW minimum			
<b>Dielectric Strength</b>	Between power and output terminals: 2,000V AC, 1 minute Between contacts of different poles: 2,000V AC, 1 minute Between contacts of the same pole: 750V AC, 1 minute			
<b>Power Consumption (approximate)</b>	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), 14.4VA (200V AC, 60Hz)
	—	12VDC/1W 24VDC/0.7W 24VAC/1.2VA	12VDC/1.1W 24VDC/0.6W 24VAC/1.3VA	12VDC/0.8W 24VDC/0.6W 24VAC/1.3VA
<b>Mechanical Life</b>	10,000,000 operations minimum		5,000,000 operations minimum	
<b>Electrical Life</b>	50,000 operations minimum (rated load)		100,000 operations minimum (rated load)	
<b>Weight (approximate)</b>	63g	73g	79g	80g
<b>Vibration Resistance</b>	100m/sec <sup>2</sup> (approximate 10G)			
<b>Shock Resistance</b>	Operating extremes: 100m/sec <sup>2</sup> (approximate 10G) Damage limits: 500m/sec <sup>2</sup> (approximate 50G)			
<b>Operating Temperature</b>	-10 to +50°C			
<b>Operating Humidity</b>	45 to 85% RH			
<b>Storage Temperature</b>	-30 to +80°C			
<b>Housing Color</b>	Gray			

**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 B: Interval 1 C: Cycle 1 D: Cycle 3	AF20: 100 to 240V AC (50/60Hz)	0.1 seconds to 180 hours	250V AC, 3A, 30V DC, 1A (resistive load)	Delayed SPDT	GT3A-1AF20	GT3A-1EAF20
	AF20: 100 to 240V AC (50/60Hz) D12: 12V DC AD24: 24V AC (50/60Hz)/24V DC				Delayed SPDT + Instantaneous SPDT	GT3A-2AF20
				Delayed DPDT		GT3A-2D12
					Delayed DPDT	GT3A-2AD24
				Delayed DPDT		GT3A-3AF20
	Delayed DPDT				GT3A-3D12	GT3A-3ED12
Delayed DPDT		GT3A-3AD24	GT3A-3EAD24			

- 1. For wiring schematics and timing diagrams for GT3A-1, -2, -3, see pages 807 and 808 respectively.
- 2. For more details about time ranges, see instructions on page 812.
- 3. For socket and accessory part numbers, see page 838.

**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 B: Cycle 2 C: Signal ON/OFF-Delay 1 D: Signal OFF-Delay 1	AF20: 100 to 240V AC (50/60Hz) D12: 12V DC AD24: 24V AC (50/60Hz)/24V DC	0.1 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 B: One-Shot Cycle C: Signal ON/OFF-Delay 2 D: Signal OFF-Delay 2	AF20: 100 to 240V AC (50/60Hz) AD24: 24V AC (50/60Hz)/24V DC	0.1 seconds to 180 hours	250V AC, 5A, 24V DC, 5A (resistive load)	Delayed DPDT	Start Reset Gate	GT3A-5AF20	GT3A-5EAF20
						GT3A-5AD24	GT3A-5EAD24
A: One-Shot B: One-Shot ON-Delay C: One-Shot 2 D: Signal ON/OFF-Delay 3	AF20: 100 to 240V AC (50/60Hz) AD24: 24V AC (50/60Hz)/24V DC	0.1 seconds to 180 hours	250V AC, 5A, 24V DC, 5A (resistive load)	Delayed DPDT	Start Reset Gate	GT3A-6AF20	GT3A-6EAF20
						GT3A-6AD24	GT3A-6EAD24

- 4. For wiring schematics and timing diagrams GT3A-4,-5,-6, see pages 809, 810, and 811 respectively.
- 5. For more details about time ranges, see instructions on page 812.
- 6. A (11-pin) and B (11-pin) differ in the way inputs are wired.
- 7. For socket and accessory part numbers, see page 838.
- 8. For the timing diagrams overview, see page 794.

Switches &amp; Pilot Lights

Display Lights

Relays &amp; Sockets

Timers

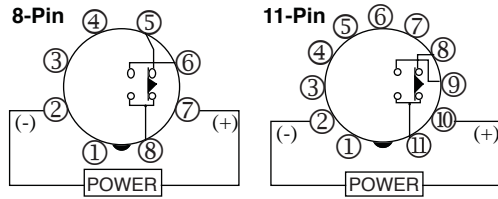
Terminal Blocks

Circuit Breakers

Timing Diagrams/Schematics

GT3A-1 Timing Diagrams  
Delayed SPDT

Operation  
Mode  
Selection



ON-Delay 1

MODE



Item	Terminal Number	Operation
Set Time		T
Power	2 - 7 (8p) 2 - 10 (11p)	[Timing diagram showing power pulse]
Delayed Contact	5 - 8 (8p) (NC)	[Timing diagram showing NC contact pulse]
	8 - 11 (11p) (NC)	[Timing diagram showing NC contact pulse]
	6 - 8 (8p) (NO) 9 - 11 (11p) (NO)	[Timing diagram showing NO contact pulse]
Indicator	POWER	[Timing diagram showing power indicator pulse]
	OUT	[Timing diagram showing indicator pulse]

Interval 1

MODE



Item	Terminal Number	Operation
Set Time		T
Power	2 - 7 (8p) 2 - 10 (11p)	[Timing diagram showing power pulse]
Delayed Contact	5 - 8 (8p) (NC)	[Timing diagram showing NC contact pulse]
	8 - 11 (11p) (NC)	[Timing diagram showing NC contact pulse]
	6 - 8 (8p) (NO) 9 - 11 (11p) (NO)	[Timing diagram showing NO contact pulse]
Indicator	POWER	[Timing diagram showing power indicator pulse]
	OUT	[Timing diagram showing indicator pulse]

Cycle 1

(OFF first)

MODE



Item	Terminal Number	Operation
Set Time		T T
Power	2 - 7 (8p) 2 - 10 (11p)	[Timing diagram showing power pulse]
Delayed Contact	5 - 8 (8p) (NC)	[Timing diagram showing NC contact pulse]
	8 - 11 (11p) (NC)	[Timing diagram showing NC contact pulse]
	6 - 8 (8p) (NO) 9 - 11 (11p) (NO)	[Timing diagram showing NO contact pulse]
Indicator	POWER	[Timing diagram showing power indicator pulse]
	OUT	[Timing diagram showing indicator pulse]

Cycle 3

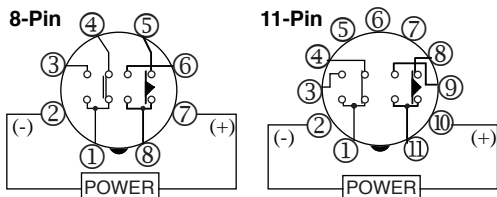
(ON first)

MODE



Item	Terminal Number	Operation
Set Time		T T
Power	2 - 7 (8p) 2 - 10 (11p)	[Timing diagram showing power pulse]
Delayed Contact	5 - 8 (8p) (NC)	[Timing diagram showing NC contact pulse]
	8 - 11 (11p) (NC)	[Timing diagram showing NC contact pulse]
	6 - 8 (8p) (NO) 9 - 11 (11p) (NO)	[Timing diagram showing NO contact pulse]
Indicator	POWER	[Timing diagram showing power indicator pulse]
	OUT	[Timing diagram showing indicator pulse]

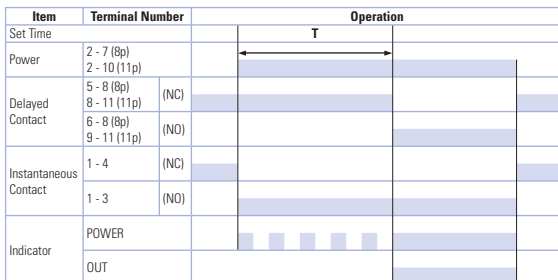
**GT3A-2 Timing Diagrams**  
**Delayed SPDT + Instantaneous SPDT**



Operation Mode Selection

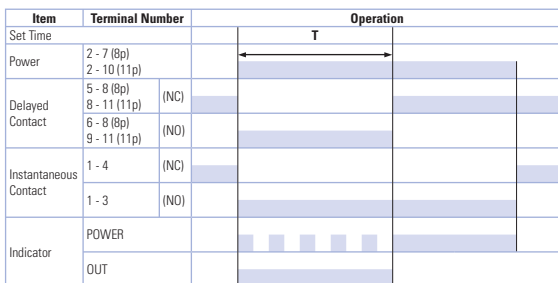
**ON-Delay 1**

MODE



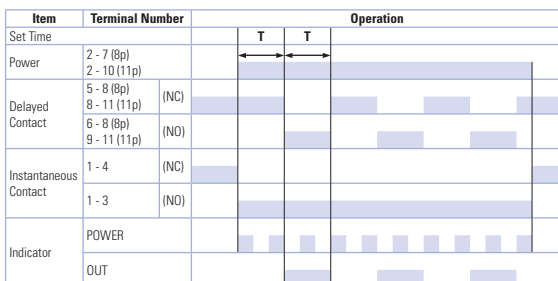
**Interval 1**

MODE

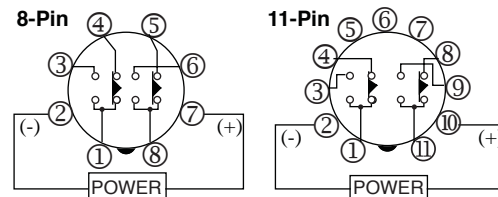


**Cycle 1 (OFF first)**

MODE



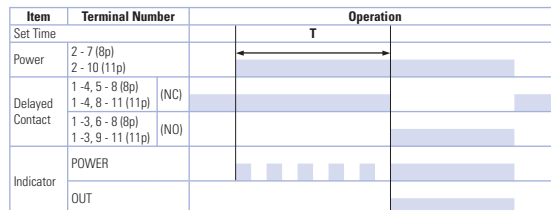
**GT3A-3 Timing Diagrams**  
**Delayed DPDT**



Operation Mode Selection

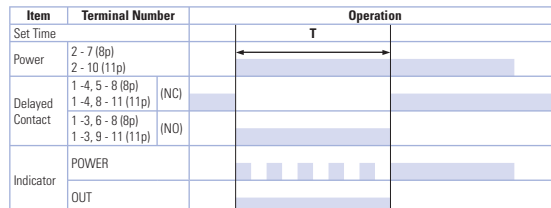
**ON-Delay 1**

MODE



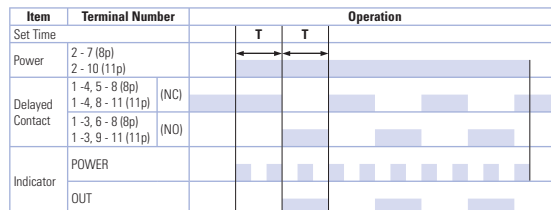
**Interval 1**

MODE



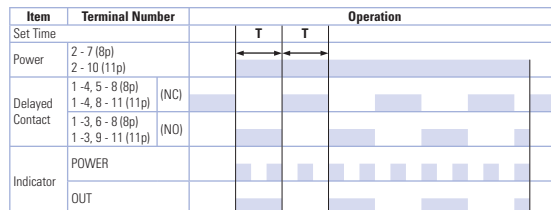
**Cycle 1 (OFF first)**

MODE



**Cycle 3 (ON first)**

MODE



Switches & Pilot Lights

Display Lights

Relays & Sockets

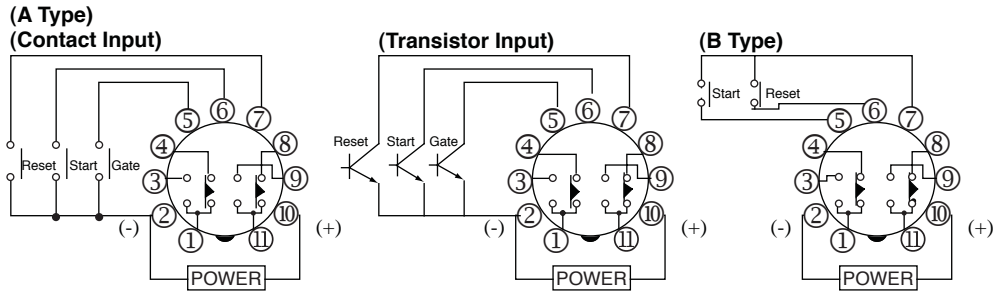
Timers

Terminal Blocks

Circuit Breakers

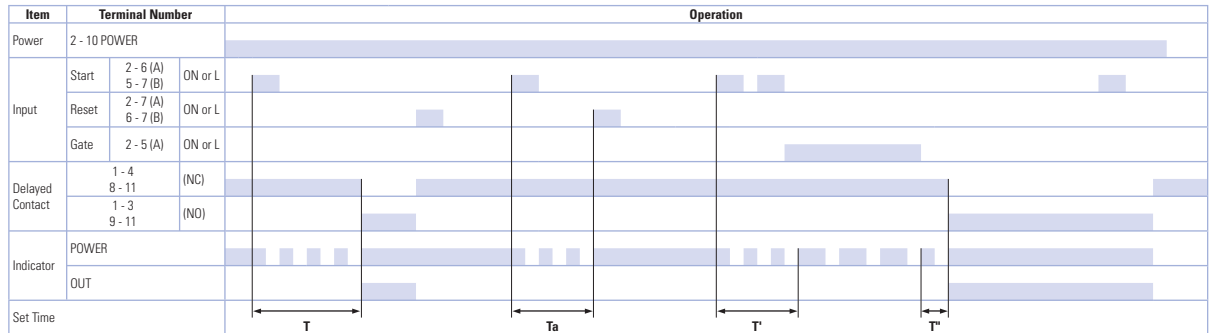
GT3A-4 Timing Diagrams  
Delayed DPDT

Operation  
Mode Selection



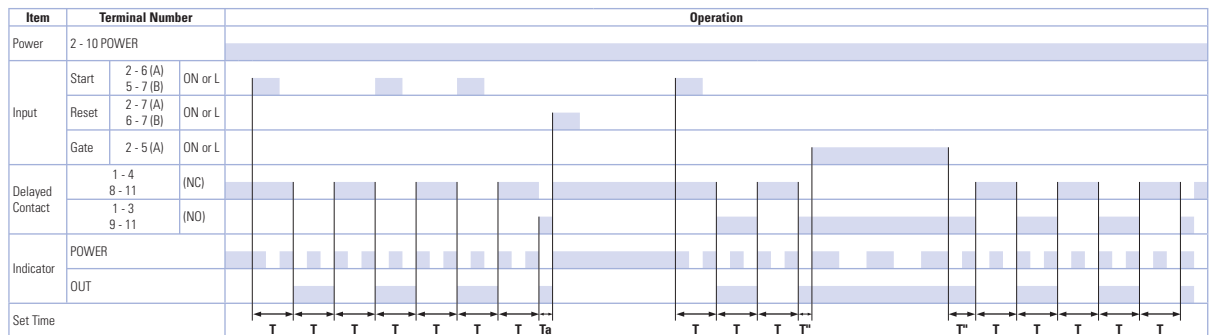
ON-Delay 2

MODE



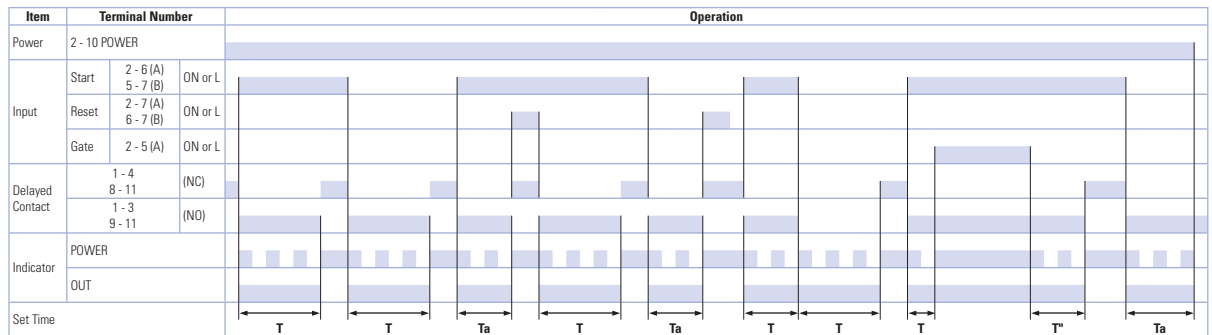
Cycle 2

MODE



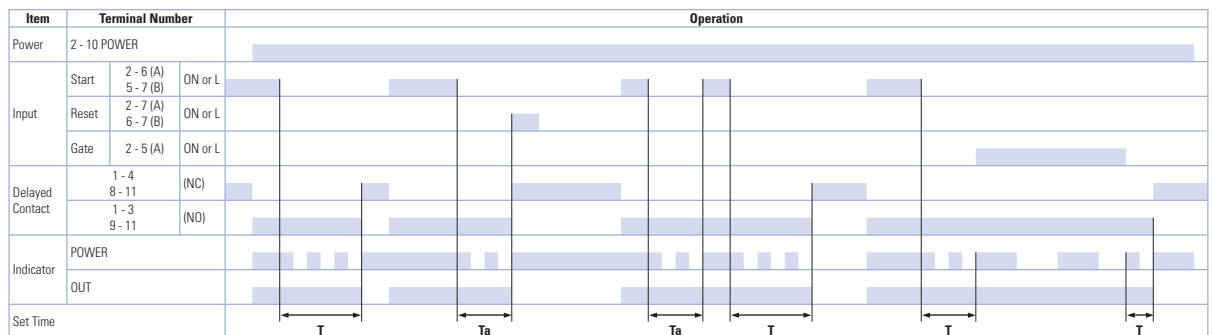
Signal ON/OFF-Delay 1

MODE



Signal OFF-Delay 1

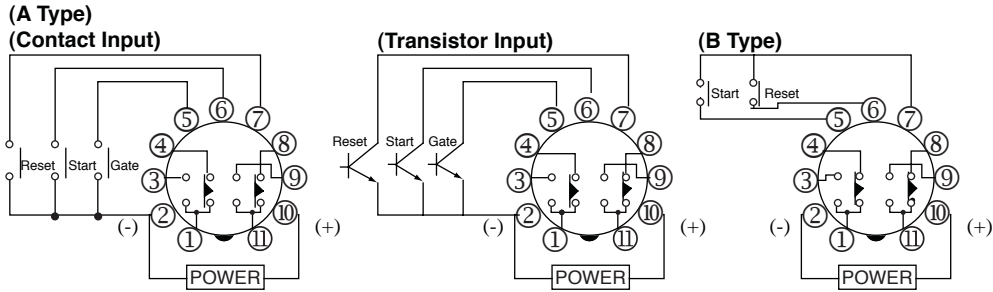
MODE



T = Set time Ta = Shorter than set time  
T = T' + T''

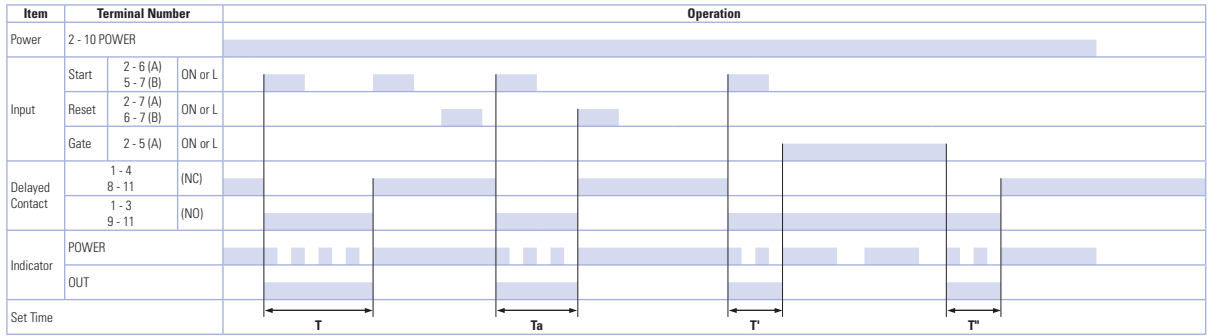
GT3A-5 Timing Diagrams  
Delayed DPDT

Operation  
Mode Selection



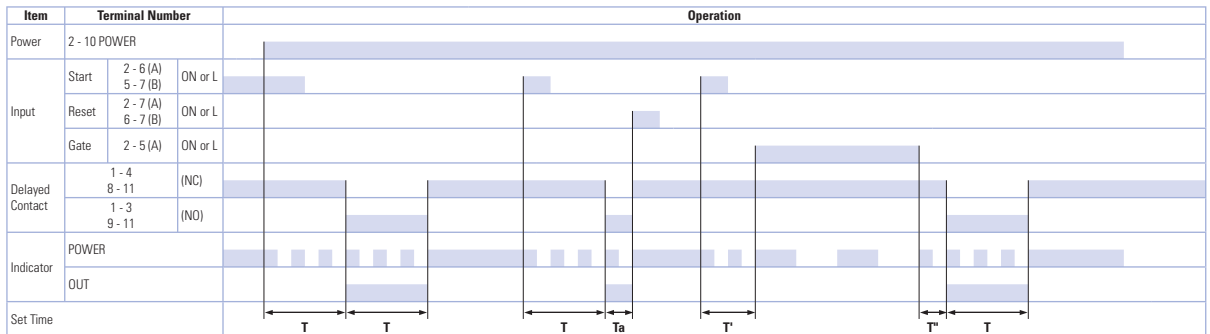
Interval 2

MODE



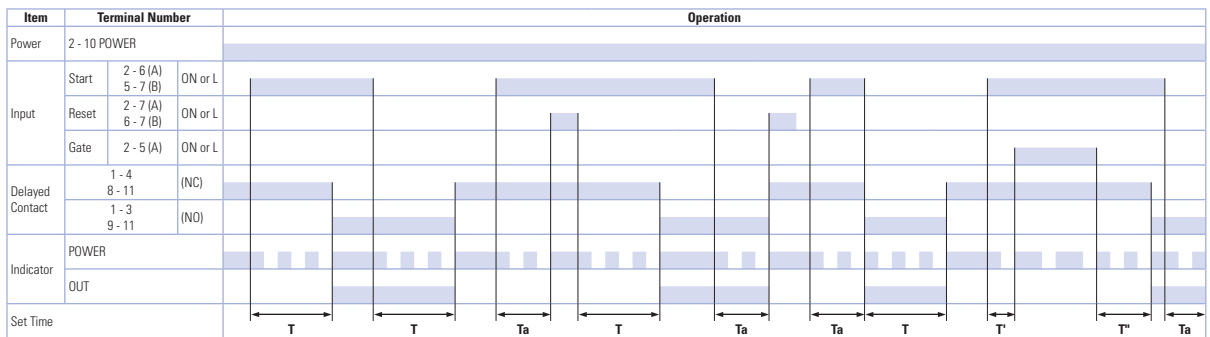
One-Shot Cycle

MODE



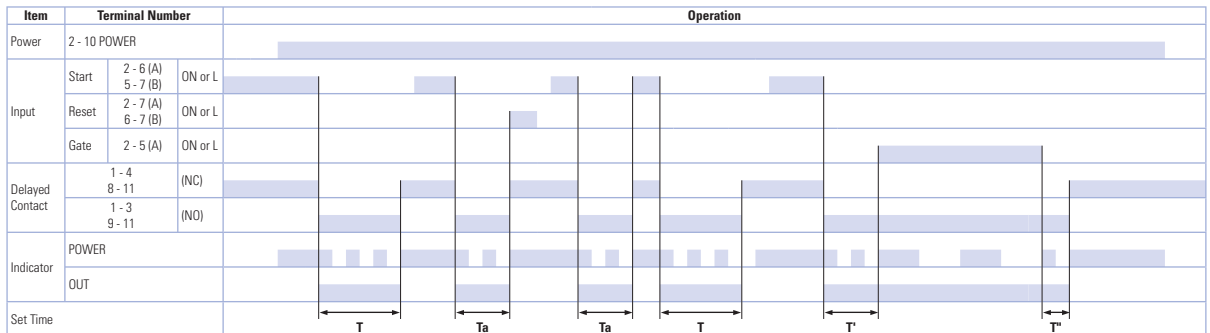
Signal ON/OFF-Delay 2

MODE



Signal OFF-Delay 2

MODE

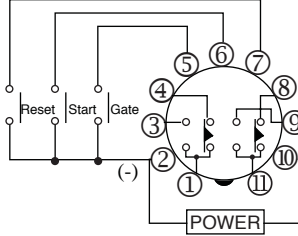


T = Set time Ta = Shorter than set time  
T = T' + T''

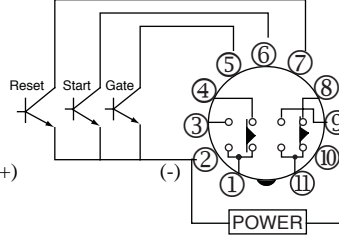
GT3A-6 Timing Diagrams  
Delayed DPDT

Operation  
Mode Selection

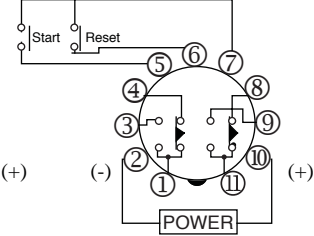
(A Type)  
(Contact Input)



(Transistor Input)

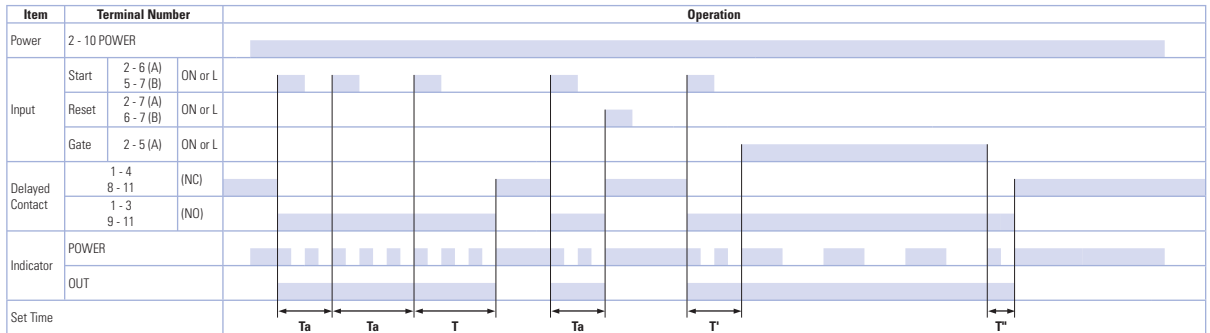


(B Type)



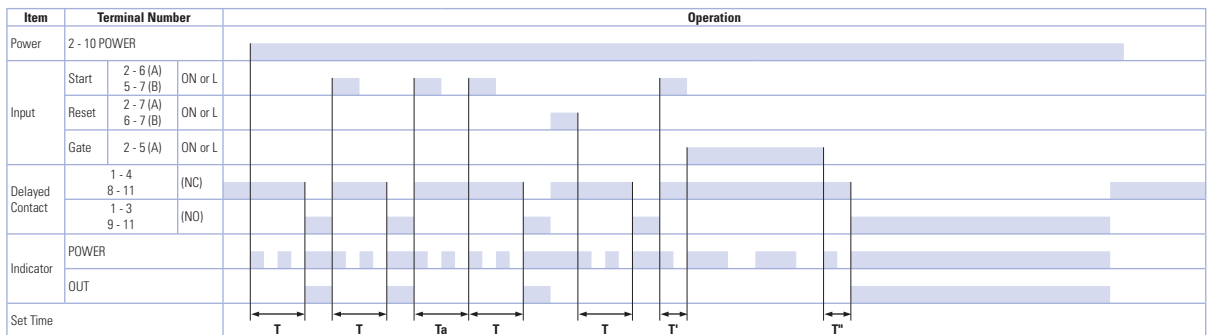
One-Shot 1

MODE



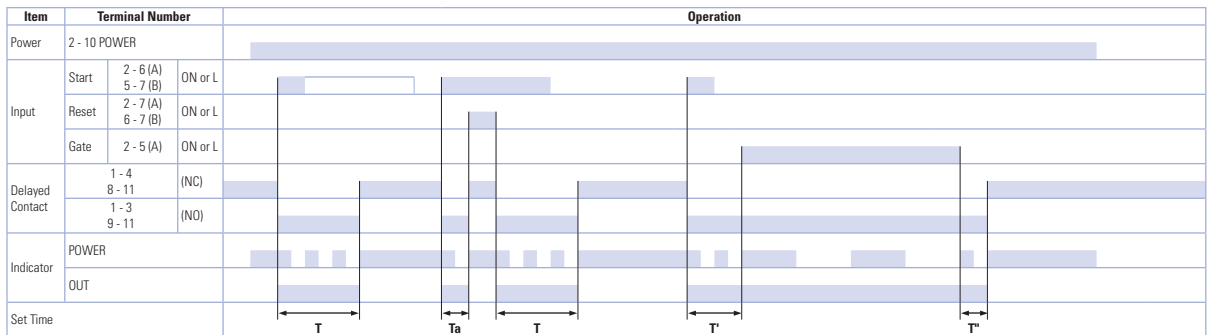
One-Shot ON-Delay

MODE



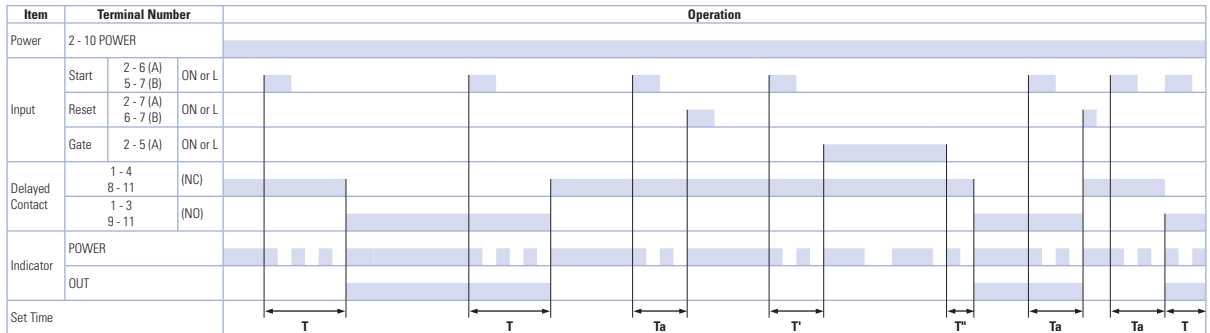
One-Shot 2

MODE



Signal ON/OFF-Delay 3

MODE



T = Set time  $T_a$  = Shorter than set time  
 $T = T' + T''$

**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 GT3A-2 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		③ Time 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.		
	0.1 seconds to 3 seconds		0-3				
	0.1 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.							

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers



## GT3D – Digital Timers

### Key features of the GT3D series include:

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



UL Recognized  
File No. E55996

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



CSA Certified  
File No. LR58183  
File No. LR96764  
File No. LR83814



### Specifications

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

**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 1-B: Interval 1 first 1-C: Cycle 1 (OFF first) 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 1-B: Interval 1 first 1-C: Cycle 1 (OFF first) 1-D: Cycle 3 (ON first) 2-A: ON-delay 2 2-B: Cycle 2 2-C: Signal ON/OFF-delay 1 2-D: Signal OFF-delay 1 2-E: Interval 2 2-F: One-shot cycle 3-A: Signal ON/OFF-delay 2 3-B: Signal OFF-delay 2 3-C: One-shot 1 3-D: One-shot ON-delay 3-E: One-shot 2 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**

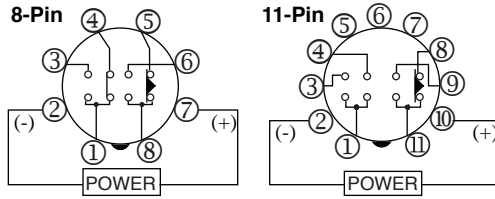
Mode of Operation	Time Range	Output	Contact	Rated Voltage Code	Complete Part No. (11-Pin)
1: ON-delay one-shot 1 2: Cycle one-shot 3: ON-delay one-shot 2	0.01s to 99.9 hours	240V AC/24V DC, 5A (resistive load)	Delayed DPDT	100 to 240V AC (50/60Hz)	GT3D-8AF20
				24V AC/DC	GT3D-8AD24

- 
1. For wiring schematics and timing diagrams GT3D, see pages 815 to 822.
  2. For more details about time ranges, see instructions on page 823.
  3. A (11-pin) and B (11-pin) differ in the way inputs are wired.
  4. For socket and accessory part numbers, see page 838.
  5. For timing diagrams overview, see page 794.

Timing Diagrams/Schematics

GT3D-2 Timing Diagrams  
Delayed SPDT + Instantaneous SPDT

Operation  
Mode Selection



ON-Delay 1

Time Remaining  
1 — A

Time Elapsed  
1 — A

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

Interval 1

Time Remaining  
1 — B

Time Elapsed  
1 — B

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

Cycle 1

(OFF first)

Time Remaining  
1 — C

Time Elapsed  
1 — C

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

Cycle 3

(ON first)

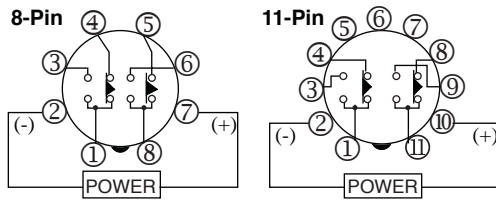
Time Remaining  
1 — D

Time Elapsed  
1 — D

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

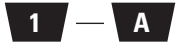
GT3D-3 Timing Diagrams  
Delayed DPDT

Operation  
Mode Selection

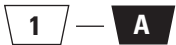


ON-Delay 1

Time Remaining



Time Elapsed



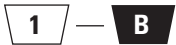
Item	Terminal Number	Operation
Set Time		Set Time
Power	2 - 7 (8p) 2 - 10 (11p)	
Delayed Contact	1 - 4, 5 - 8 (8p)	(NC)
	1 - 4, 8 - 11 (11p)	(NO)
Indicator	1 - 3, 6 - 8 (8p)	(NO)
	1 - 3, 9 - 11 (11p)	(NO)
Digital Time Display	DOWN UP	

Interval 1

Time Remaining



Time Elapsed



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

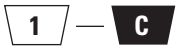
Cycle 1

(OFF first)

Time Remaining



Time Elapsed



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

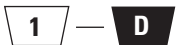
Cycle 3

(ON first)

Time Remaining



Time Elapsed

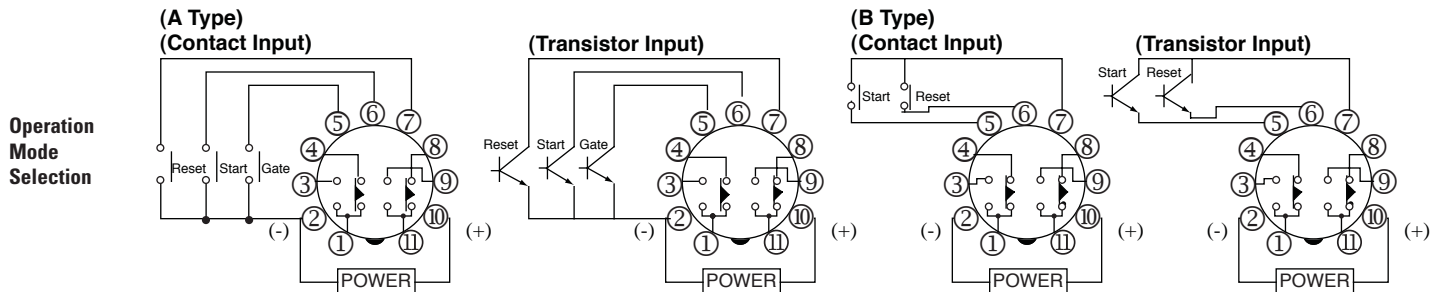


Item	Terminal Number	Operation
Set Time		Set Time
Power	2 - 7 (8p) 2 - 10 (11p)	
Delayed Contact	1 - 4, 5 - 8 (8p)	(NC)
	1 - 4, 8 - 11 (11p)	(NO)
Indicator	1 - 3, 6 - 8 (8p)	(NO)
	1 - 3, 9 - 11 (11p)	(NO)
Digital Time Display	DOWN UP	

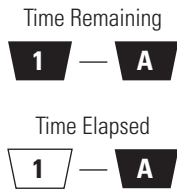
### GT3D-4 Timing Diagrams

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.

#### Delayed DPDT

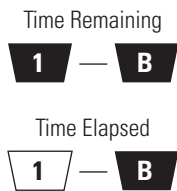


#### ON-Delay 1



Item	Terminal Number	Operation
Power	2 - 10	[Timing diagram showing power pulse]
Delayed Contact	(NC) 1 - 4 8 - 11	[Timing diagram showing normally closed contact]
	(NO) 1 - 3 9 - 11	[Timing diagram showing normally open contact]
Indicator	OUT	[Timing diagram showing indicator output]
Digital Time Display	DOWN	[Timing diagram showing digital display down]
	UP	[Timing diagram showing digital display up]
Set Time		[Timing diagram showing set time interval]

#### Interval 1



Item	Terminal Number	Operation
Power	2 - 10	[Timing diagram showing power pulse]
Delayed Contact	(NC) 1 - 4 8 - 11	[Timing diagram showing normally closed contact]
	(NO) 1 - 3 9 - 11	[Timing diagram showing normally open contact]
Indicator	OUT	[Timing diagram showing indicator output]
Digital Time Display	DOWN	[Timing diagram showing digital display down]
	UP	[Timing diagram showing digital display up]
Set Time		[Timing diagram showing set time interval]

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

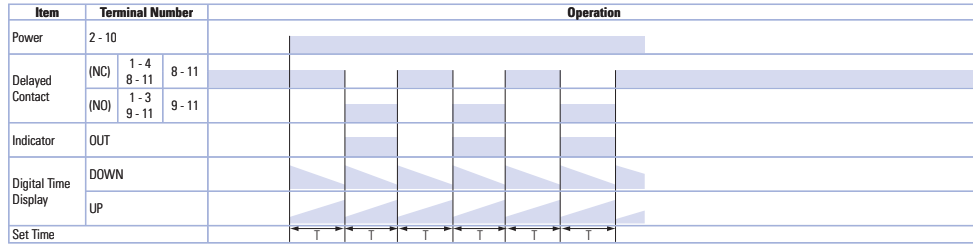
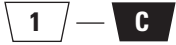
**GT3D-4 Timing Diagrams**

**Cycle 1**  
(OFF first)

Time Remaining



Time Elapsed

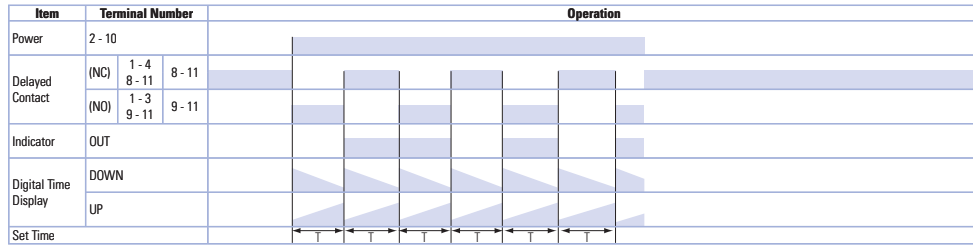
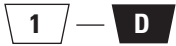


**Cycle 3**  
(ON first)

Time Remaining



Time Elapsed

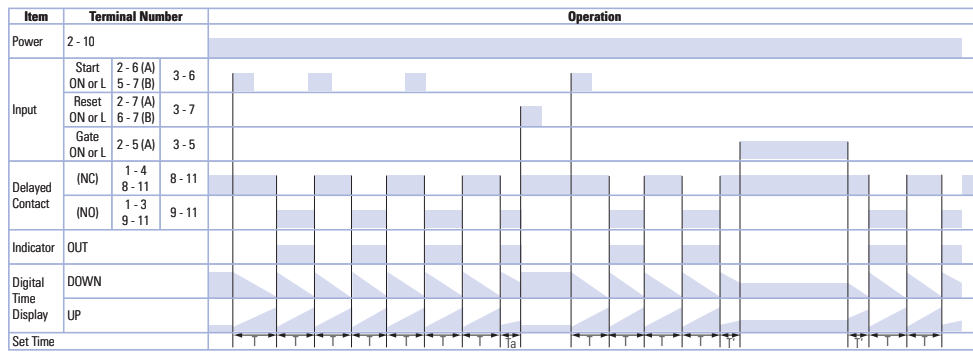
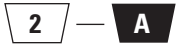


**ON-Delay 2**

Time Remaining



Time Elapsed



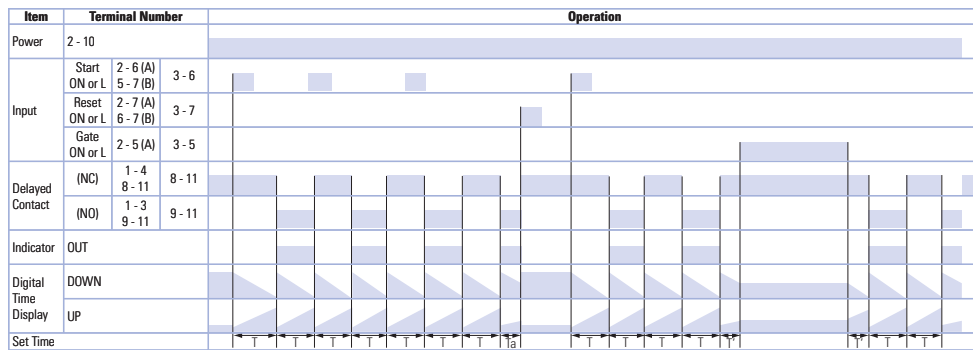
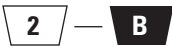
GT3D-4 Timing Diagrams

Cycle 2

Time Remaining



Time Elapsed

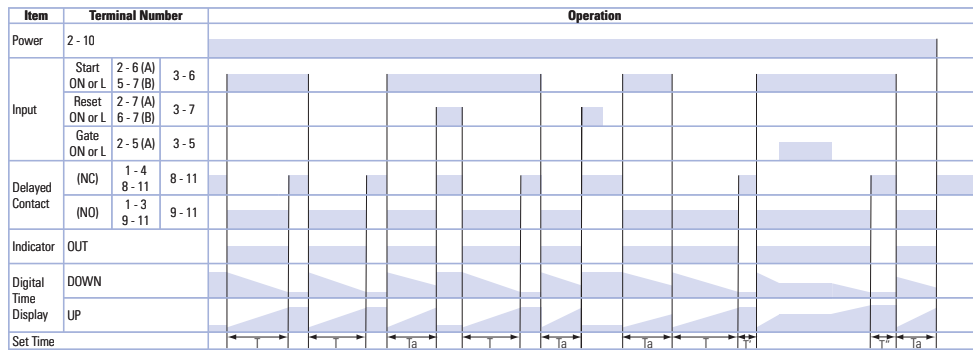
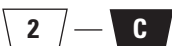


Signal ON/OFF-Delay 1

Time Remaining



Time Elapsed

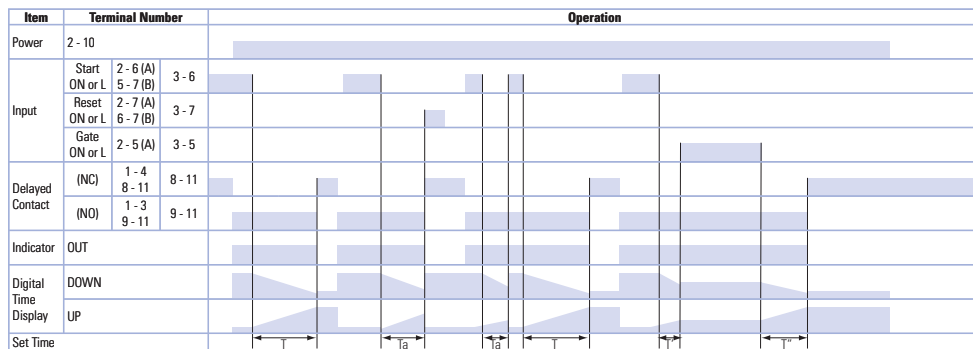
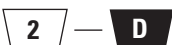


Signal OFF-Delay 1

Time Remaining



Time Elapsed

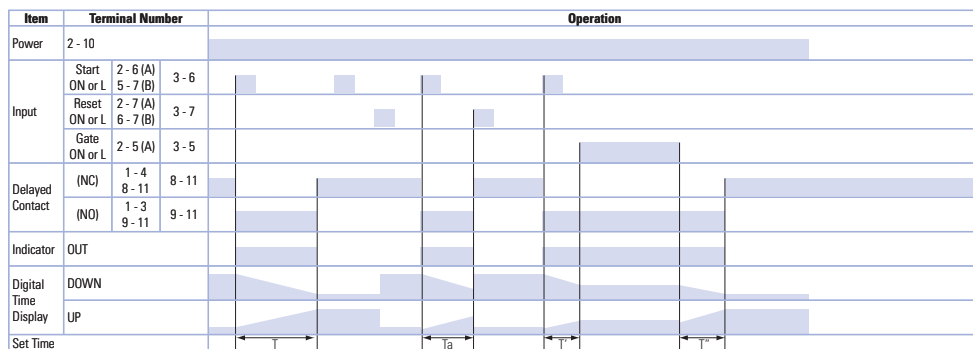
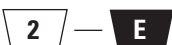


Interval 2

Time Remaining



Time Elapsed



Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

**GT3D-4 Timing Diagrams**

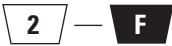
Switches & Pilot Lights

**One-Shot Cycle**

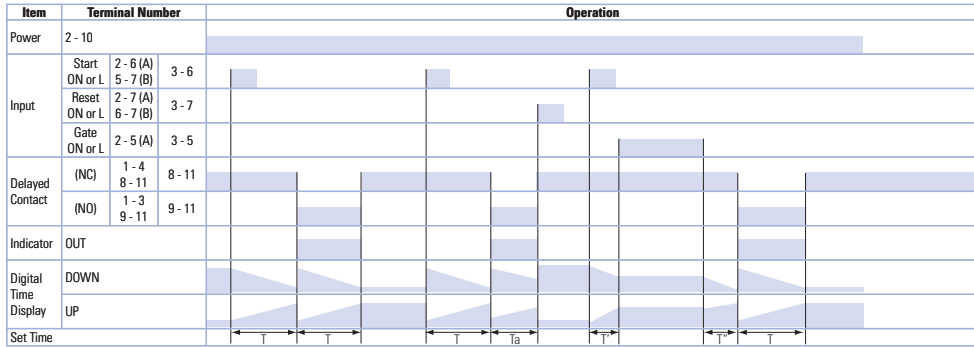
Time Remaining



Time Elapsed



Display Lights



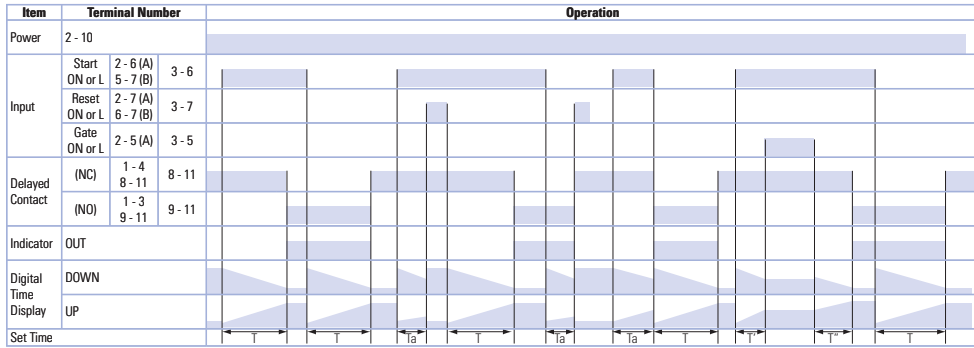
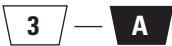
Relays & Sockets

**Signal ON/OFF-Delay 2**

Time Remaining



Time Elapsed



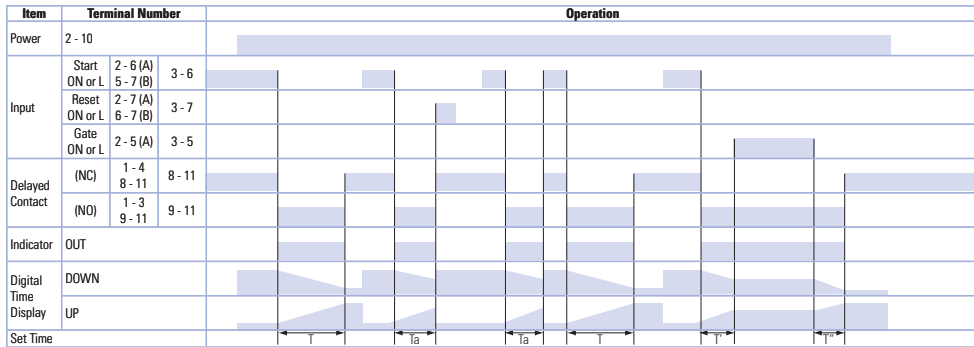
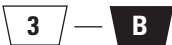
Timers

**Singal OFF-Delay 2**

Time Remaining



Time Elapsed



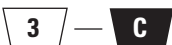
Terminal Blocks

**One-Shot 1**

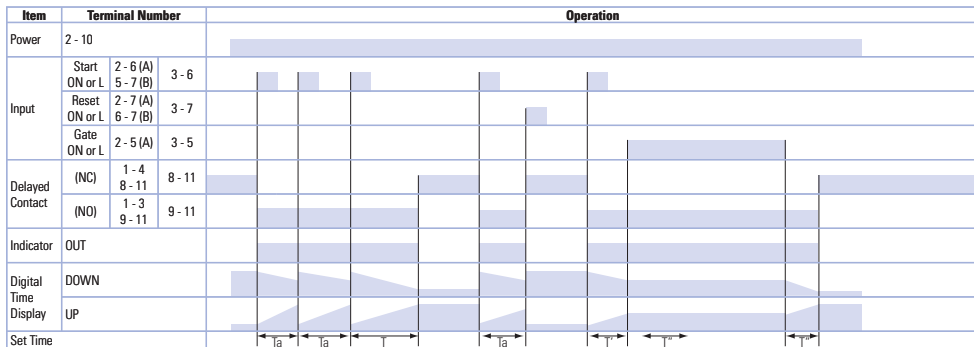
Time Remaining



Time Elapsed



Circuit Breakers





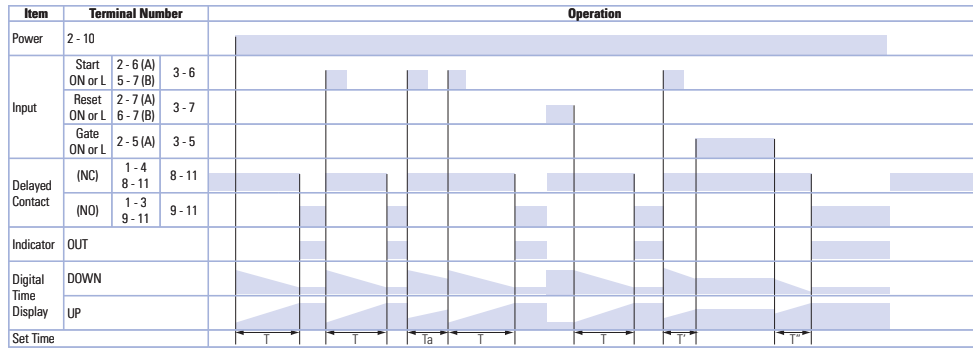
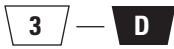
GT3D-4 Timing Diagrams

One-Shot ON-Delay

Time Remaining



Time Elapsed

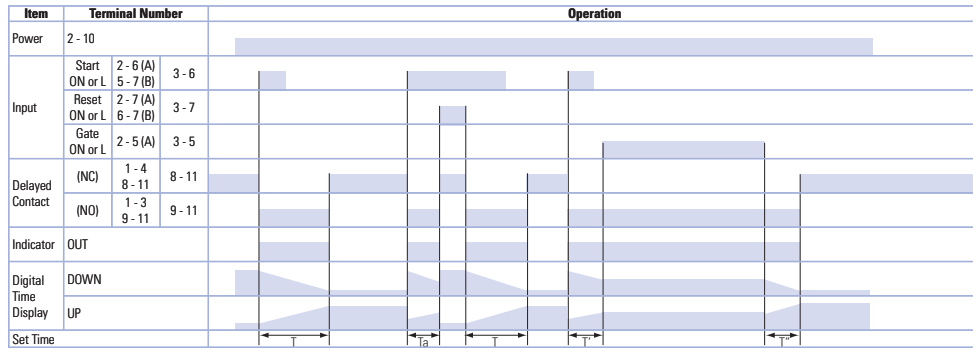
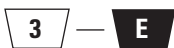


One-Shot 2

Time Remaining



Time Elapsed

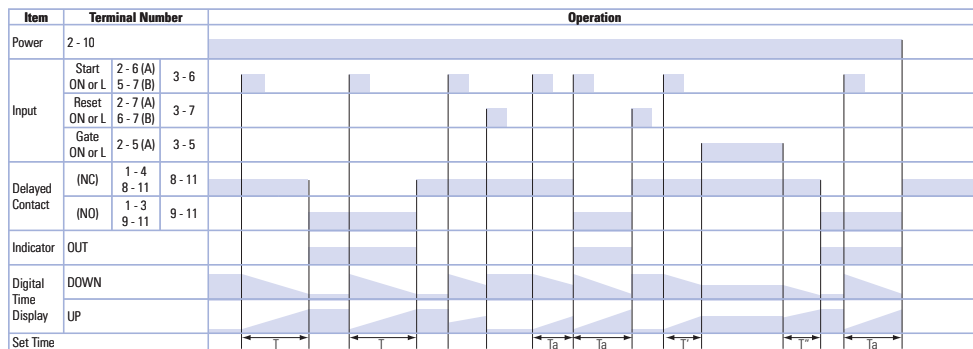
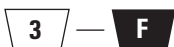


Signal ON/OFF-Delay 3

Time Remaining



Time Elapsed



Switches & Prior Lights

Display Lights

Relays & Sockets

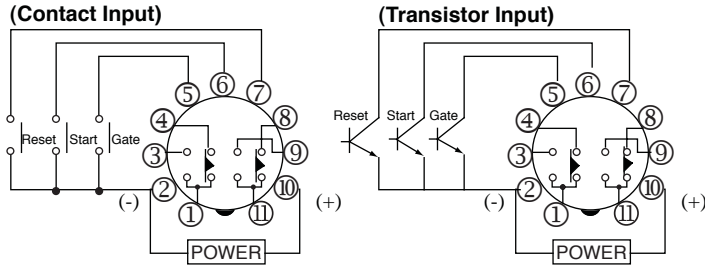
Timers

Terminal Blocks

Circuit Breakers

GT3D-8 Timing Diagrams  
Delayed DPDT

Operation  
Mode Selection



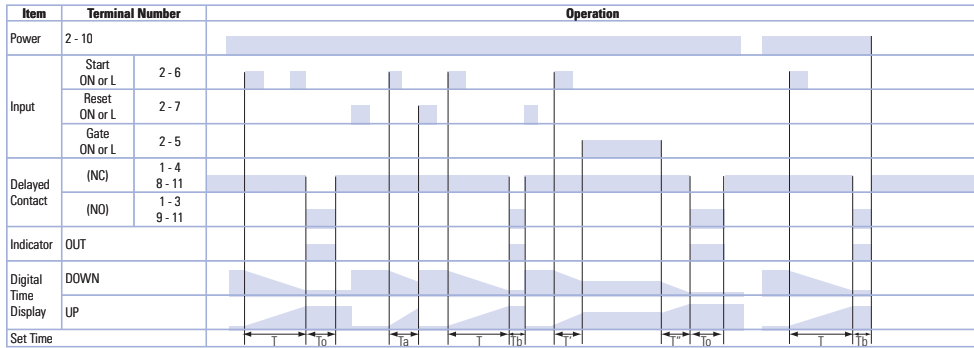
Switches & Pilot Lights

Display Lights

ON-Delay One-Shot 1

Time Remaining **1**

Time Elapsed **1**

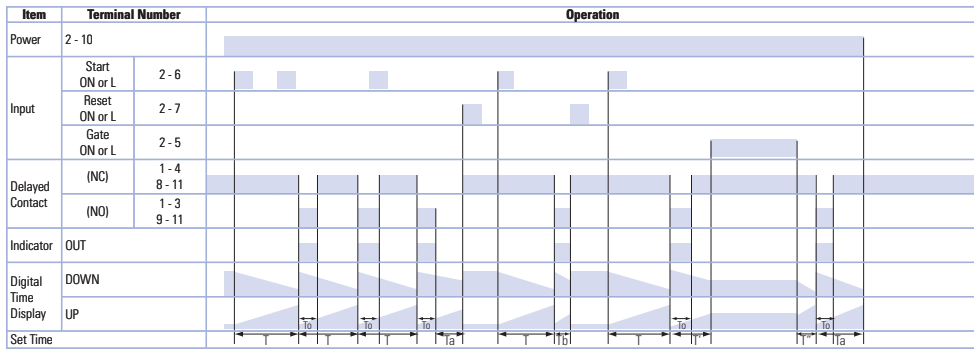


Relays & Sockets

Cycle One-Shot

Time Remaining **2**

Time Elapsed **2**

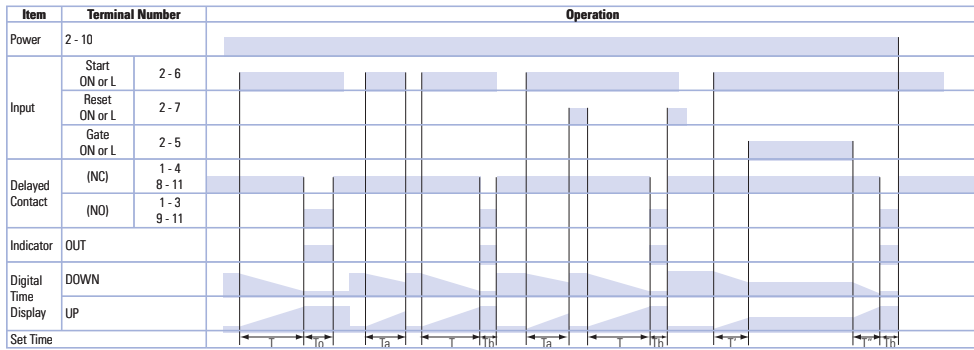


Timers

ON-Delay One-Shot 2

Time Remaining **3**

Time Elapsed **3**



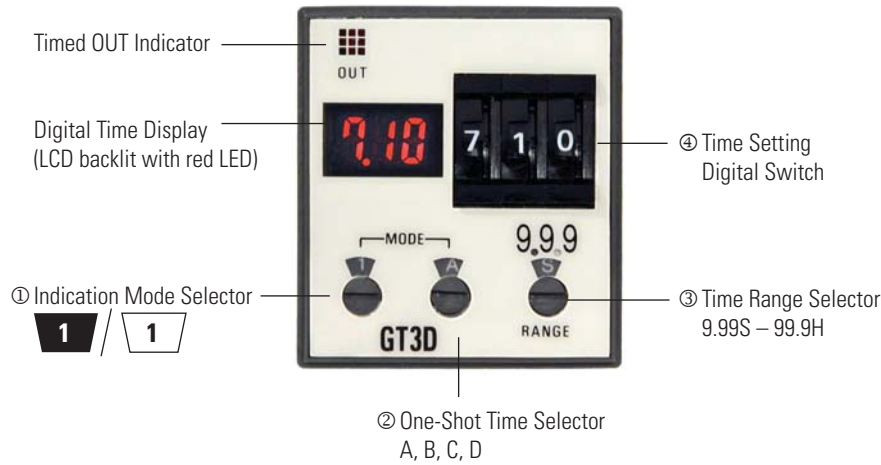
Terminal Blocks



T = Set time  
 T<sub>a</sub> = Shorter than set time  
 T<sub>b</sub> = Shorter than single-shot output time  
 T = T' + T"  
 T<sub>0</sub> = Single-shot output time (selected from A, B, C, D, E or F)

Circuit Breakers

Instructions: Setting GT3D-2, GT3D-3 Timers



Step 1	Desired Mode/Selection				Remarks	
Select the desired time display and operation modes.	Time Display Mode	① Indicator Mode Selector	Operation Mode	② Operation Mode Selector	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. 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 selectors ①② to set the operation mode. 3. The ① 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 elapsed		ON-delay 1	A		
	Time remaining					
	Time elapsed		Interval	B		
	Time remaining					
	Time elapsed		Cycle 1	C		
	Time remaining					
	Time elapsed		Cycle 3	D		
	Time remaining					

Step 2	Desired Operation	Selection		Remarks
Select a time range that contains the desired period of time.	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 indicators S (seconds), M (minutes), and H (hours). 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. 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	
	0.01 seconds to 9.99 seconds	9.99		
	0.1 seconds to 99.9 seconds	99.9		
	1 second to 999 seconds	999		
	0.1 minutes to 99.9 minutes	99.9		
1 minute to 999 minutes	999			
0.1 hours to 99.9 hours	99.9			

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.

Switches & Pilot Lights

Display Lights

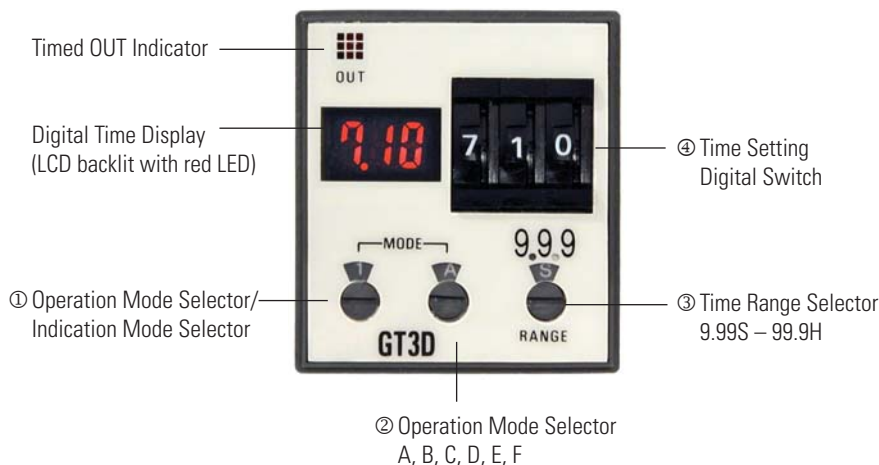
Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

Instructions: Setting GT3D-4 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		ON-delay 1 Interval 1 Cycle 1 D: Cycle 3	A B C D	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.  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 selectors ① ② to set the operation mode.  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.
	Time remaining				
	Time elapsed		ON-delay 2 Cycle 2 Signal ON/OFF-delay 2 Signal OFF-delay 1 Interval 2 One-shot cycle	A B C D E F	
	Time remaining				
	Time elapsed		Signal ON/OFF-delay 2 Signal OFF-delay 2 One-shot 1 One-shot ON-delay One-shot 2 Signal ON/OFF-delay 3	A B C D E F	
	Time remaining				
Step 2	Desired Operation	Selection		Remarks	
Select a time range that contains the desired period of time.	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 indicators S (seconds), M (minutes), and H (hours).  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.  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		
	0.01 seconds to 9.99 seconds	9.99			
	0.1 seconds to 99.9 seconds	99.9			
	1 second to 999 seconds	999			
	0.1 minutes to 99.9 minutes	99.9			
1 minute to 999 minutes	999				
0.1 hours to 99.9 hours	99.9				
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.

Switches & Pilot Lights

Display Lights

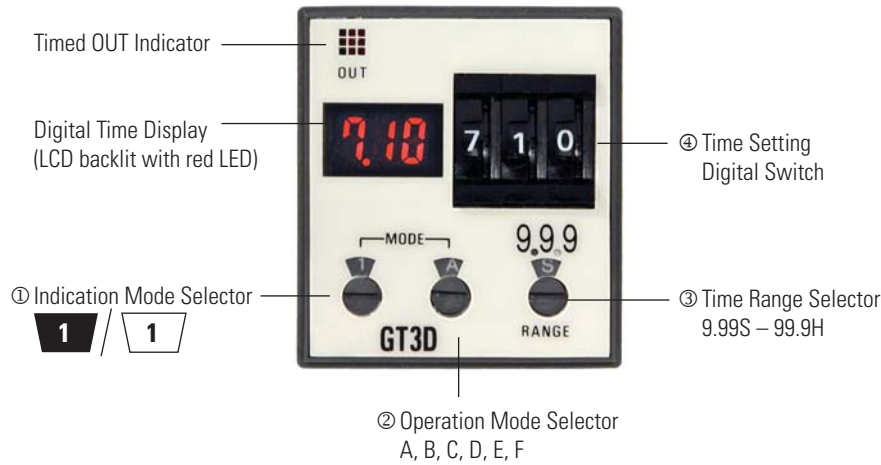
Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

### Instructions: Setting GT3D-8 Timers



Step 1	Desired Mode of Operation		Selection		Remarks
Select the time display and operation modes.	Operation Mode	Time elapsed	① Indicator 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. 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 Indicator Mode Selector		
	Cycle One-Shot	Time elapsed	① Indicator Mode Selector		
		Time remaining	① Indicator Mode Selector		
	ON-Delay One-Shot 2	Time elapsed	① Indicator Mode Selector		
		Time remaining	① Indicator Mode Selector		
Step 2	Desired Mode of Operation		Selection		Remarks
Select the single shot output time.	Desired Single-Shot Output Time		② Single-Shot Output Time Selector		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.
	0.1 seconds		A		
	0.5 seconds		B		
	1 second		C		
	5 seconds		D		
	10 seconds		E		
50 seconds		F			
Step 3	Desired Operation		Selection		Remarks
Select a time range that contains the desired period of time.	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 indicators S (seconds), M (minutes), and H (hours). 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. 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.
	0.01 seconds to 9.99 seconds		Decimal Point Indicator	Time Increment Indicator	
	0.1 seconds to 99.9 seconds		9.99	S	
	1 second to 999 seconds		99.9	M	
	0.1 minutes to 99.9 minutes		999	H	
	1 minute to 999 minutes		99.9		
	0.1 hours to 99.9 hours		999		
Step 4	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.

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

## GT3F Series – True OFF Delay Timers

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

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


**Specifications**

	GT3F-1	GT3F-2
<b>Operation</b>	True power OFF-delay	
<b>Time Range</b>	0.1 seconds to 600 seconds	
<b>Rated Voltage</b>	100 to 240V AC, 50/60Hz 24V AC/DC	
<b>Contact Rating</b>	250V AC/30V DC, 5A (resistive load)	250V AC/30V DC, 3A (resistive load)
<b>Contact Form</b>	SPDT	DPDT
<b>Minimum Power Application Time</b>	1 second	
<b>Voltage Tolerance</b>	AF20: 100 to 240V AC AD24: 21.6 to 26.4VDC, 20.4 to 26.4VAC	
<b>Repeat Error</b>	±0.2%, ±10 msec	
<b>Voltage Error</b>	±0.2%, ±10 msec	
<b>Temperature Error</b>	±0.2%, ±10 msec	
<b>Setting Error</b>	±10% maximum	
<b>Insulation Resistance</b>	100MW minimum	
<b>Dielectric Strength</b>	Between power and output terminals: 2,000V AC, 1 minute (SPDT) 1,500V AC, 1 minute (DPDT) Between contacts on different poles: 1,000V AC, 1 minute (DPDT) Between contacts of the same pole: 750V AC, 1 minute	
<b>Power Consumption</b>	AF20: 3.7VA (200V AC, 60Hz) AD24: 0.8W (DC), 1.2VA (AC)	
<b>Mechanical Life</b>	20,000,000 operations minimum	
<b>Electrical Life</b>	100,000 operations minimum	
<b>Vibration Resistance</b>	100m/sec <sup>2</sup> (approximate 10G)	
<b>Shock Resistance</b>	Operating extremes: 100 m/sec <sup>2</sup> (approximate 10G) Damage limits: 500 m/sec <sup>2</sup> (approximate 50G)	
<b>Operating Temperature</b>	–10 to +50°C	
<b>Storage Temperature</b>	–30 to +80°C	
<b>Operating Humidity</b>	45 to 85% RH	
<b>Weight (approximate)</b>	77g	79g

1. An inrush current flows during the minimum power application time. AF20: approximate 0.4A, AD24: approximate 1.2A
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.

Switches &amp; Pilot Lights

Display Lights

Relays &amp; Sockets

Timers

Terminal Blocks

Circuit Breakers

Part Numbering List

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)	0.1 seconds to 600 seconds	250V AC, 5A,	Delayed SPDT	Reset	GT3F-1AF20	GT3F-1EAF20
			30V DC, 5A (resistive load)			GT3F-1AD24	GT3F-1EAD24
	AD24: 24V AC/DC		250V AC, 3A,	Delayed DPDT	None (8p) Reset (11p)	GT3F-2AF20	GT3F-2EAF20
			30V DC, 3A (resistive load)			GT3F-2AD24	GT3F-2EAD24

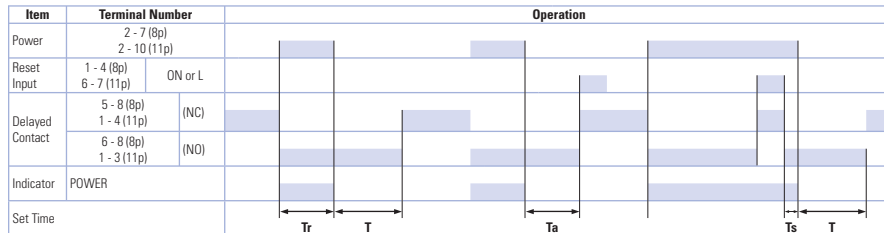
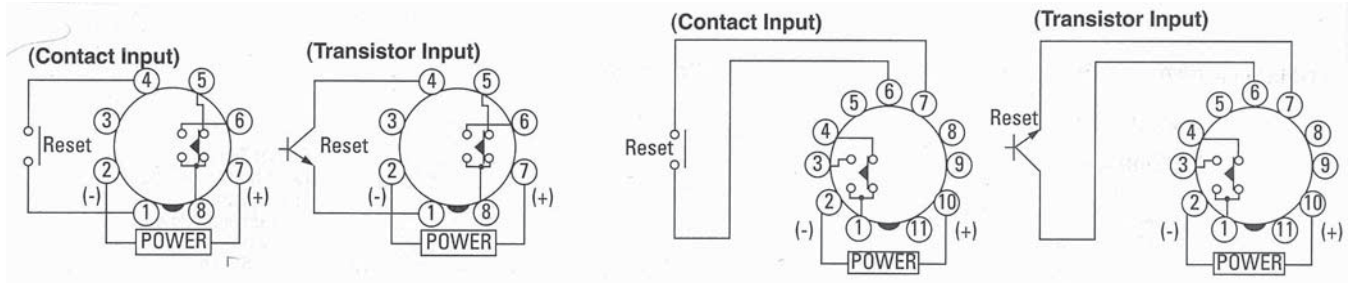


Optional reset input resets the contact to the OFF state before time out.

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

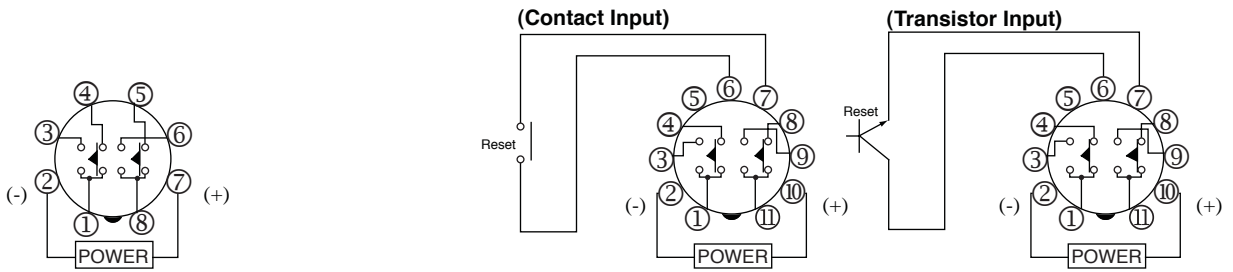
1. For time ranges, see page 829.
2. For sockets and accessory part numbers, see page 838.
3. When power is applied, the NO output contact closes. When power is removed, the timing period begins. When time has elapsed, the NO contact opens.
4. For the timing diagram overview, see page 794.

GT3F-2 Timing Diagrams

GT3F-2 (8-pin)

GT3F-2E (11-pin)

Delayed DPDT Output



8-Pin Type

Item	Terminal Number	Operation
Power	2 - 7	[Timing diagram showing power pulses]
Delayed Contact	1 - 4 (NC)	[Timing diagram showing NC contact state]
	5 - 8 (NO)	[Timing diagram showing NO contact state]
Indicator	POWER	[Timing diagram showing power indicator]
Set Time		[Timing diagram showing set time T and Tr]

11-Pin Type

Item	Terminal Number	Operation
Power	2 - 10	[Timing diagram showing power pulses]
Reset Input	6 - 7 (11p) ON or L	[Timing diagram showing reset input pulses]
Delayed Contact	1 - 4 (NC)	[Timing diagram showing NC contact state]
	5 - 8 (NO)	[Timing diagram showing NO contact state]
Indicator	POWER	[Timing diagram showing power indicator]
Set Time		[Timing diagram showing set time T, Tr, Ta, and Ts]

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.

- T = Set time
- Ta = Shorter than set time
- Ts = 1 Second
- Tr = Minimum Power Application Time
- GT3F-1: 1 Second

Item	Terminal Number	Operation
Power	2 - 10	[Timing diagram showing power pulses]
Reset Input	6 - 7 (11p) ON or L	[Timing diagram showing reset input pulses]
Delayed Contact	1 - 4 (NC)	[Timing diagram showing NC contact state]
	5 - 8 (NO)	[Timing diagram showing NO contact state]
Indicator	POWER	[Timing diagram showing power indicator]
Set Time		[Timing diagram showing set time T, Tr, Ta, and Ts]



### Instructions: Setting GT3F Series Timers



Step 1	Desired Operation	Selection		Remarks
Select a time range that contains the desired period of time.	Base Time Ranges	① Dial Selector	② Time Range Selector	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.
	0.1s to 1s	0 to 1	1s	
	0.1s to 3s	0 to 3		
	0.1s 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			
Step 2				Remarks
The set time is selected by turning the ③ Setting Knob.				Setting Examples: 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. 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.

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

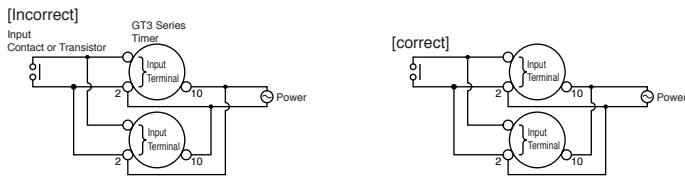
Terminal Blocks

Circuit Breakers

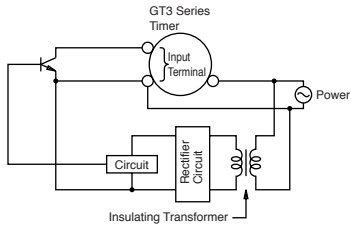
Instructions: Wiring Inputs

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.

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

### GT3S (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 Star-Delta switching time: 0.05 sec 0.1 sec 0.25 sec 0.5 sec	250V AC/30V DC, 5A (resistive load)	Star: Delayed SPST-NO Delta: Delayed SPST-NO	GT3S-1AF20
				Star: Delayed SPST-NO Delta: Delayed SPST-NO 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

#### 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)

Switches & Pilot Lights

Display Lights

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

**General Specifications**

<b>Operation System</b>	Solid state CMOS circuitry	
<b>Operation Type</b>	Star-delta	
<b>Time Range</b>	Star side: 0.05 to 100 sec Star-delta switching time: 0.05, 0.1, 0.25, 0.5 sec	
<b>Rated Operational Voltage</b>	100 to 240V AC (50/60Hz)	
<b>Operating Temperature</b>	-10 to +50°C	
<b>Storage Temperature</b>	-30 to +80°C	
<b>Operating Humidity</b>	45 to 85% RH	
<b>Voltage Tolerance</b>	85 to 264V AC	
<b>Repeat Error</b>	±0.2%, ±10 msec	
<b>Voltage Error</b>	±0.2%, ±10 msec	
<b>Temperature Error</b>	±0.2%, ±10 msec	
<b>Setting Error</b>	±10% maximum	
<b>Reset Time</b>	500 msec maximum	
<b>Insulation Resistance</b>	100MΩ minimum	
<b>Dielectric Strength</b>	Between power and output terminals: 2,000V AC, 1 minute Between contacts of different poles: 2,000V AC, 1 minute Between contacts of the same pole: 750V AC, 1 minute	
<b>Vibration Resistance</b>	100 m/sec <sup>2</sup> (Approx. 10G)	
<b>Shock Resistance</b>	Operating extremes: 100m/sec <sup>2</sup> (Approx. 10G) Damage limits: 500m/sec <sup>2</sup> (Approx. 50G)	
<b>Power Consumption (Approx.)</b>	<b>Type GT3S-1</b>	2.3VA (100V AC, 60Hz), 4.0VA (200V AC, 60Hz)
	<b>Type GT3S-2</b>	2.3VA (100V AC, 60Hz), 3.8VA (200V AC, 60Hz)

Switches &amp; Pilot Lights

Display Lights

Relays &amp; Sockets

**Timers**

Terminal Blocks

Circuit Breakers

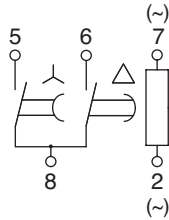
Operation Charts

Product Series

Internal Connection and Terminal Arrangement

Operation Chart

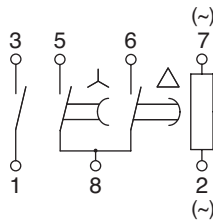
GT3S-1  
Star: Delayed SPST-NO  
Delta: Delayed SPST-NO



Item	Terminal No.	Operation
Power	2-7	[Power ON bar]
Star Delayed Contact	8-5 (NO)	[Star ON bar from T1 to T2]
Delta Delayed Contact	8-6 (NO)	[Delta ON bar from T2 to T3]
Indicator	Star	[Star ON bar from T1 to T2]
	Delta	[Delta ON bar from T2 to T3]
Set Time		[Timeline with T1, T2, T3 markers]

The star delayed contact goes on when power is turned on and goes off after a set time for the start contact ( $T_1$ ). The delta delayed contact goes on after star-delta switching time ( $T_2$ ) and goes off when power is turned off.  
 $T_1$  = Star ON time (Set Time),  $T_2$  = Star-delta switching time,  $T_3$  = Delta ON time

GT3S-2  
Star: Delayed SPST-NO  
Delta: Delayed SPST-NO  
Instantaneous: SPST-NO



Item	Terminal No.	Operation
Power	2-7	[Power ON bar]
Star Delayed Contact	8-5 (NO)	[Star ON bar from T1 to T2]
Delta Delayed Contact	8-6 (NO)	[Delta ON bar from T2 to T3]
Instantaneous contact	3-1 (NO)	[Instantaneous ON bar from T1 to T3]
Indicator	Star	[Star ON bar from T1 to T2]
	Delta	[Delta ON bar from T2 to T3]
Set Time		[Timeline with T1, T2, T3 markers]

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.  
 The instantaneous contact goes on when power is turned on and goes off when power is turned off.  
 $T_1$  = Star ON time (Set Time),  $T_2$  = Star-delta switching time,  $T_3$  = Delta ON time

## 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


**General Specifications**

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

**Contact Ratings**

<b>Allowable Contact Power</b>	960VA/120W	
<b>Allowable Voltage</b>	250V AC/150V DC	
<b>Allowable Current</b>	5A	
<b>Maximum permissible operating frequency</b>	1800 cycles per hour	
<b>Rated Load</b>	1/8HP, 240V AC	
	3A, 240V AC (Resistive)	
	5A, 120V AC/30V DC (Resistive)	
<b>Conditional Short Circuit</b>	Fuse 5A, 250V	
<b>Life</b>	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 applies.

Switches &amp; Pilot Lights

Display Lights

Relays &amp; Sockets

Timers

Terminal Blocks

Circuit Breakers

Part Number List

Part Numbers

Mode of Operation	Output	Contact	Time Range*	Rated Voltage	Pin Configuration	New Part Numbers
A: Sequential Start B: On-delay with course and fine C: Recycler and instaneous D: Recycler outputs (OFF Start) E: Recycler outputs (ON Start) F: Interval ON G: Interval ON Delay H: Sequential Interval	3A, 240V AC	Delayed SPDT + Delayed SPDT	1: 0.1sec - 6 hours *(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	
	5A, 120V AC/30V DC (Resistive Load)		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 timing diagrams and schematics, see page 836.
2. For socket and accessory part number information, see page 838.
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 794.
5. \*For details on setting time ranges, see the instructions on page 837.

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			

Switches & Pilot Lights

Display Lights

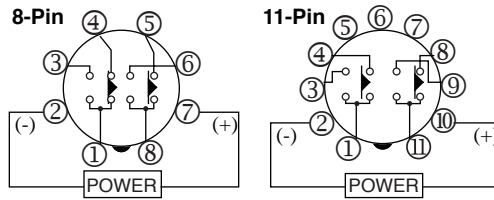
Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers

Timing Diagrams/Schematics



Mode	Operation Chart				Mode	Operation Chart			
A: Sequential Start	Item	Terminal No.	Operation	Description	E: Recycler outputs (ON Start)	Item	Terminal No.	Operation	Description
	Power	2-7	[Timing Diagram]			Power	2-7	[Timing Diagram]	
B: On-delay with course and fine	Item	Terminal No.	Operation	Description	F: Interval ON	Item	Terminal No.	Operation	Description
	Delayed Contact Ry1	1-4 (NC) 1-3 (NO)	[Timing Diagram]	ON after T1 + T2		Delayed Contact Ry1	1-4 (NC) 1-3 (NO)	[Timing Diagram]	ON during T1
C: Recycler and instantaneous	Item	Terminal No.	Operation	Description	G: Interval ON Delay	Item	Terminal No.	Operation	Description
	Delayed Contact Ry2	5-8 (NC) 6-8 (NO)	[Timing Diagram]	OFF during T1 ON during T2		Delayed Contact Ry2	5-8 (NC) 6-8 (NO)	[Timing Diagram]	ON after T1, during T2
D: Recycler outputs (OFF Start)	Item	Terminal No.	Operation	Description	H: Sequential Interval	Item	Terminal No.	Operation	Description
	Indicator	OUT1 OUT2	[Timing Diagram]			Indicator	OUT1 OUT2	[Timing Diagram]	

Switches & Pilot Lights

Display Lights

Relays & Sockets

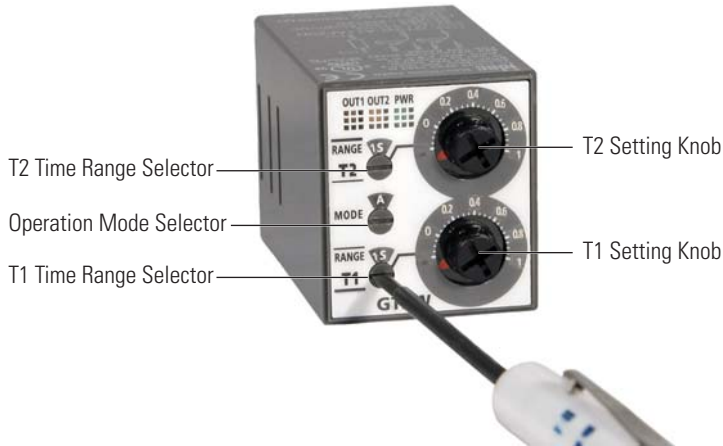
Timers

Terminal Blocks

Circuit Breakers



## 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 may 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 severe 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.

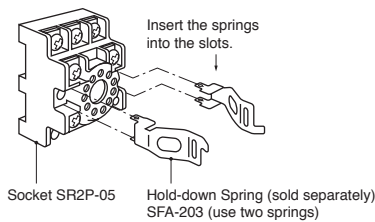
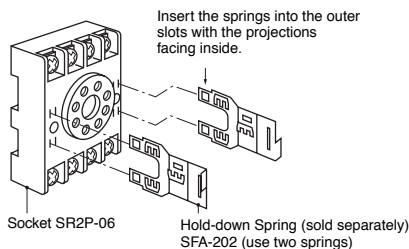
**GT3 Series  
Accessories**

**DIN Rail Mounting Accessories**

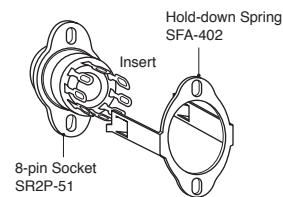
**DIN Rail/Surface Mount Sockets and Hold-Down Springs**

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) GT3D-1, 2, 3 (8-pin) GT3F-1, 2 (8-pin) GT3W (8-pin) GT3S	SR2P-05		SFA-203
11-Pin Screw Terminal (dual tier)		GT3A-1, 2, 3 (11-pin) GT3A-4, 5, 6 GT3D-1, 2, 3 (11-pin) GT3D-4, 8 GT3F-1, 2 (11-pin) GT3W (11-pin)	SR3P-05		
8-Pin Fingersafe Socket		GT3A-1, 2, 3 (8-pin) GT3D-1, 2, 3 (8-pin) GT3F-1, 2 (8-pin) GT3W (8-pin) GT3S	SR2P-05C		
11-Pin Fingersafe Socket		GT3A-1, 2, 3 (11-pin) GT3A-4, 5, 6 GT3D-1, 2, 3 (11-pin) GT3D-4, 8 GT3F-1, 2 (11-pin) GT3W (11-pin)	SR3P-05C		
8-Pin Screw Terminal		GT3A-1, 2, 3 (8-pin) GT3D-1, 2, 3 (8-pin) GT3F-1, 2 (8-pin) GT3W (8-pin) GT3S	SR2P-06		SFA-202
11-Pin Screw Terminal		GT3A-1, 2, 3 (11-pin) GT3A-4, 5, 6 GT3D-1, 2, 3 (11-pin) GT3D-4, 8 GT3F-1, 2 (11-pin) GT3W (11-pin)	SR3P-06		
DIN Mounting Rail Length 1000mm		—	BNDN1000		

**Installation of Hold-Down Springs  
DIN Rail Mount Socket**



**Panel Mount Socket**



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Panel Mounting Accessories

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) GT3D- (8-pin) GT3W- (8-pin) GT3F- (8-pin) GT3S	SR2P-51		SFA-402
11-Pin Solder Terminal		GT3A- (11-pin) GT3D- (11-pin) GT3W- (11-pin) GT3F- (11-pin)	SR3P-51		




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For information on installing the hold-down springs, see page 838.

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		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

Relays & Sockets

Timers

Terminal Blocks

Circuit Breakers



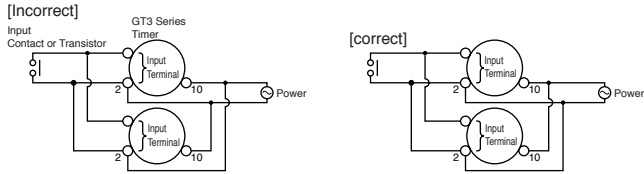
No hold down springs are available for flush panel mounting.

Instructions: Wiring Inputs for GT3 Series

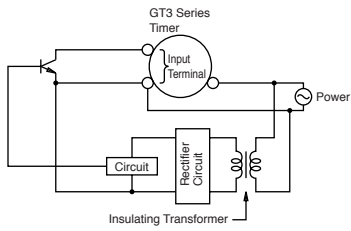
Inputs Inputs

To avoid electric shock, do not touch the input signal terminal during power voltage application.

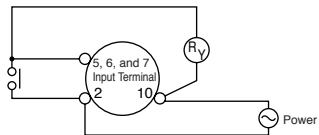
When connecting the input signal terminals of two or more GT3A timers to the same contact or transistor, the input terminals of the same number should be connected. (Connect Terminals No.2 in common.)



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.

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Relays & Sockets

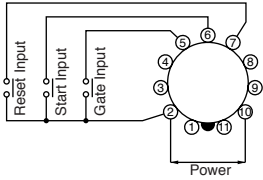
Timers

Terminal Blocks

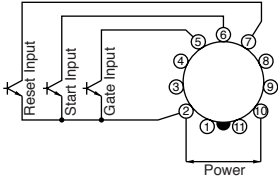
Circuit Breakers

Inputs Instructions, continued

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

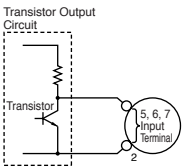


For transistor input, use transistors with the following specifications; VCE = 40V, VCES = 1V or less, IC = 50 mA or more, and ICBO = 50μA or less. The resistance should be less than 1kΩ when the transistor is on. When the output transistor switches on, a signal is input to the timer.



Inputs: GT3A-1, -2, -3

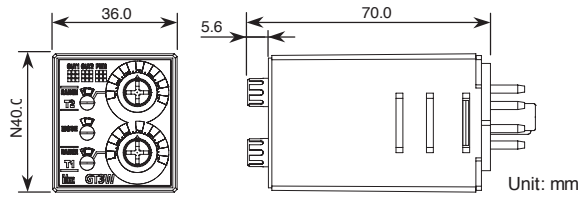
Transistor output equipment such as proximity switches and photoelectric switches can input signals if they are voltage/current output type, with power voltage ranges from 18 to 30V and have 1V. When the signal voltage switches from H to L, a signal is input to the timer



Inputs: GT3A-4, -5, -6

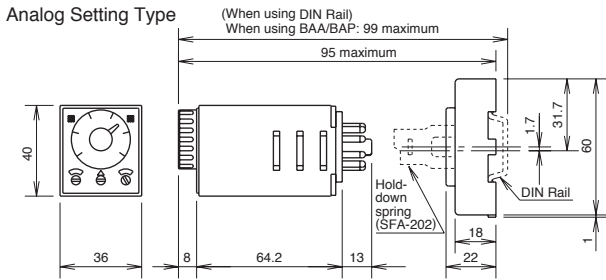
<b>Start Input</b>	The start input initiates a time-delay operation and controls output status.	No-voltage contact inputs and NPN open collector transistor inputs are applicable. 24V DC, 1mA maximum Input response time: 50msec maximum
<b>Reset Input</b>	When the reset input is activated, the time is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

Dimensions

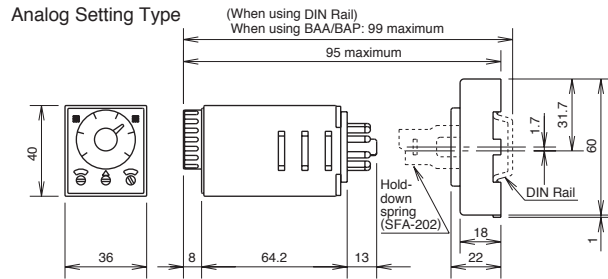


NOTE: GT3W series are UL Listed when used in combination with following IDEC's sockets:  
 GT3W-A11, A33: SR2P-06\* pin type socket.  
 GT3W-A11E: SR3P-05\* pin type socket.  
 (\*-May be followed by A,B,C or U)  
 The socket to be used with these timers are rated:  
 -Conductor Temperature Rating 60°C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

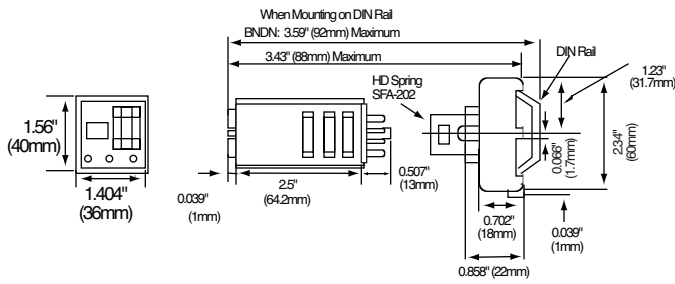
Analog GT3 Timer, 8-Pin with SR2P-06



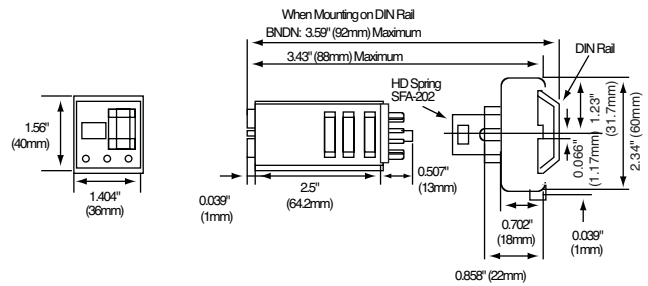
Analog GT3 Timer, 11-Pin with SR3P-06



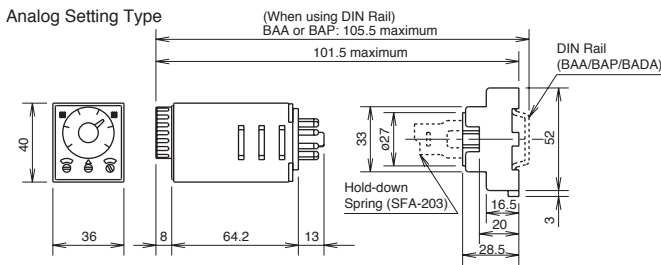
Digital GT3 Timer, 8-Pin with SR2P-06



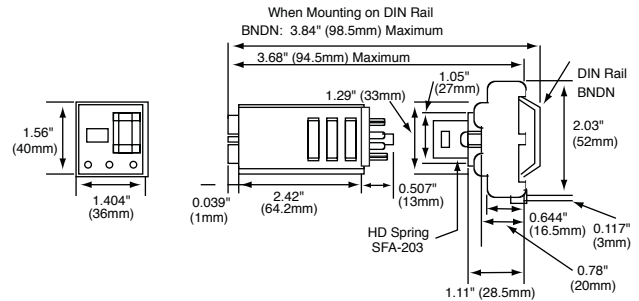
Digital GT3 Timer, 11-Pin with SR3P-06



Analog GT3 Timer, 11-Pin with SR3P-05



Digital GT3 Timer, 11-Pin with SR3P-05



Switches & Pilot Lights

Display Lights

Relays & Sockets

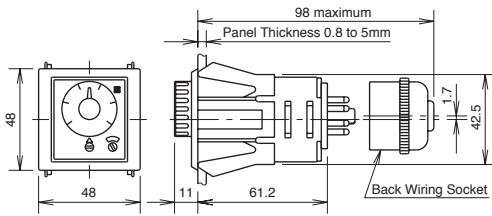
Timers

Terminal Blocks

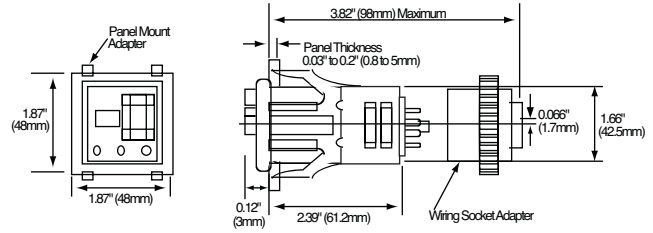
Circuit Breakers

Panel Mount Adapter

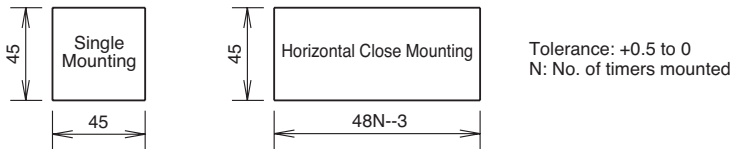
Analog GT3 Timer, 8-Pin and 11-Pin with SR6P-S08 or SR6P-S11



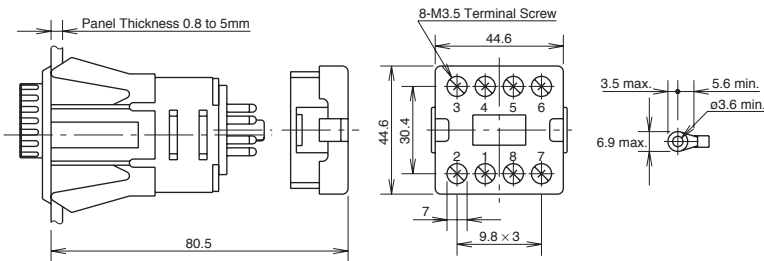
Digital GT3 Timer, 8-Pin and 11-Pin with SR6P-S08 or SR6P-S11



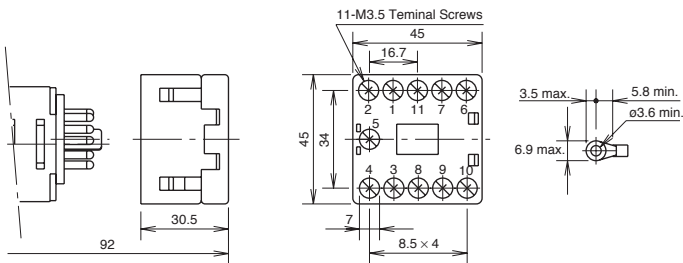
Mounting Hole Layout



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

Switches & Pilot Lights

### 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.

Display Lights

Relays & Sockets

### 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:

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

$$\text{Voltage Error} = \pm \frac{T_v - T_r \times 100\%}{T_r}$$

T<sub>v</sub>: Average of measured values at voltage V  
T<sub>r</sub>: Average of measured values at the rated voltage

$$\text{Temperature Error} = \pm \frac{T_t - T_{20} \times 100\%}{T_{20}}$$

T<sub>t</sub>: Average of measured values at °C  
T<sub>20</sub>: Average of measured values at 20°C

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

Timers

Terminal Blocks

Circuit Breakers