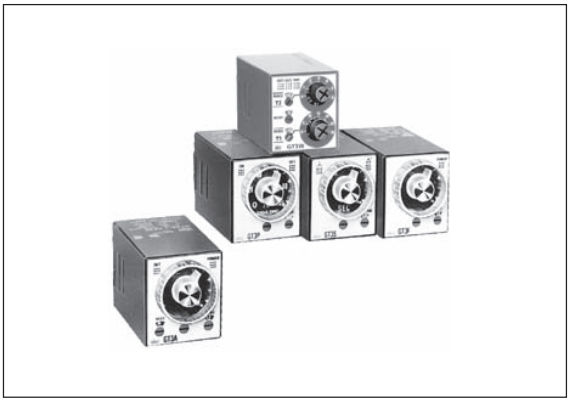
GT3 Series Multi-function Timers

Wide Variety Including OFF Delay and Star-Delta Types



Universal AC power voltage 100 to 240V AC
Solid-state CMOS circuitry ensures high accuracy
Easy-to-view operation indicator
DIN 48mm square panel mount adapter for snap mounting
Complies with safety standards. UL/c-UL listed.
Complies with EN standard

[Multi-mode Type]
Instantaneous operation at zero setting
Multi-mode, and universal AC power voltage cover 96 types by one timer

Type List

Multi-Mode Type

For details, see pages 1067 to 1072.

Operation Mode		Type	Contact	Time Range	Output	Operating Voltage	Type No.
On Delay Interval ON Cycle OFF Cycle ON		GT3A-1	Delayed SPDT	0.1 sec to 180 hours	240V AC, 3A 120V AC/ 30V DC, 5A	100 to 240V AC	GT3A-1AF20
		GT3A-2	Delayed SPDT + Instantaneous SPDT			100 to 240V AC	GT3A-2AF20
						24V AC/24V DC	GT3A-2AD24
		GT3A-3	Delayed DPDT		240V AC/ 24V DC, 5A	100 to 240V AC	GT3A-3AF20
						24V AC/24V DC	GT3A-3AD24
ON Delay Cycle Signal ON/OFF Delay Signal OFF Delay	With Input	GT3A-4	Delayed DPDT (11P)	0.1 sec to 180 hours	240V AC/ 24V DC, 5A	100 to 240V AC	GT3A-4AF20
						24V AC/24V DC	GT3A-4AD24
Interval ON One Shot Cycle Signal ON/OFF Delay Signal OFF Delay	With Input	GT3A-5				100 to 240V AC	GT3A-5AF20
						24V AC/24V DC	GT3A-5AD24
One Shot One Shot ON Delay One Shot Signal ON/OFF Delay	With Input	GT3A-6				100 to 240V AC	GT3A-6AF20
						24V AC/24V DC	GT3A-6AD24

OFF Delay Type

For details, see pages 1073 to 1074.

Operation Mode		Type	Contact	Time Range	Output	Operating Voltage	Type No.
Power OFF Delay	With Reset Input	GT3F-1	Delayed SPDT	0.1 sec to 600 sec	250V AC/ 30V DC, 5A	100 to 240V AC	GT3F-1AF20
						24V AC/24V DC	GT3F-1AD24
	Without Reset Input	GT3F-2	Delayed DPDT		250V AC/ 30V DC, 3A	100 to 240V AC	GT3F-2AF20
						24V AC/24V DC	GT3F-2AD24

Star-Delta Type

For details, see pages 1075 to 1076.

Operation Mode	Type	Contact	Time Range	Output	Operating Voltage	Type No.
Star-Delta	GT3S-1	Delayed Star: SPST-NO Delta: SPST-NO	Star: 0.05 to 100 sec Star-Delta: 0.05 sec 0.1 sec 0.25 sec 0.5 sec	250V AC/ 30V DC, 5A	100 to 240V AC	GT3S-1AF20
	GT3S-2	Delayed Star: SPST-NO Delta: SPST-NO Instantaneous: SPST-NO				GT3S-2AF20

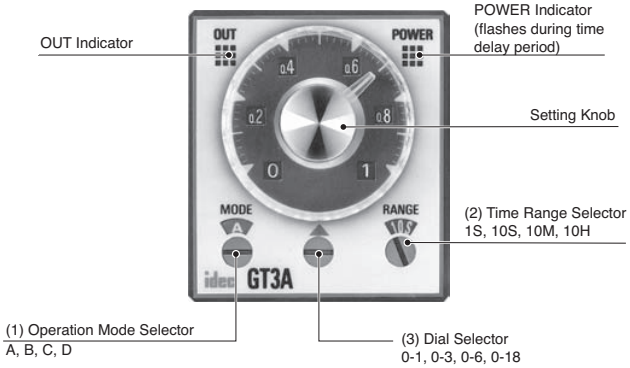
Twin-Timer Type

For details, see pages 1077 to 1078.

Operation Mode	Type	Contact	Time Range	Output	Operating Voltage	Type No.
Serial Activation Coarse/Fine Adjustment Setting Instantaneous Cycle Cycle Cycle Inversion Interval ON Interval ON Delay Serial Interval ON	GT3W-A	Delayed SPDT + Delayed SPDT	T1: 0.1 sec to 6 hours T2: 0.1 sec to 6 hours	240V AC, 3A 120V AC/ 30V DC, 5A	100 to 240V AC	GT3W-A11AF20N
					24V AC/24V DC	GT3W-A11AD24N
			T1: 0.1 sec to 6 hours T2: 0.1 sec to 300 hours		100 to 240V AC	GT3W-A13AF20N
					24V AC/24V DC	GT3W-A13AD24N
			T1: 0.1 sec to 300 hours T2: 0.1 sec to 6 hours		100 to 240V AC	GT3W-A31AF20N
					24V AC/24V DC	GT3W-A31AD24N
			T1: 0.1 sec to 300 hours T2: 0.1 sec to 300 hours		100 to 240V AC	GT3W-A33AF20N
					24V AC/24V DC	GT3W-A33AD24N

GT3A-1, -2, -3

Four Selectable Operation Modes in One Timer: ON Delay, Interval ON, Cycle, Cycle ON



Type List

(1) Operation Mode	Rated Voltage	Time Ranges	Output	Contact	Type No.
A: ON Delay B: Interval ON C: Cycle OFF D: Cycle ON	100 to 240V AC	0.1 sec to 180 hours See Time Ranges for details.	240V AC, 3A 120V AC/30V DC, 5A (resistive load)	Delayed SPDT	GT3A-1AF20
	100 to 240V AC			Delayed SPDT + Instantaneous SPDT	GT3A-2AF20
	24V AC/24V DC				GT3A-2AD24
	100 to 240V AC		240V AC/24V DC, 5A (resistive load)	Delayed DPDT	GT3A-3AF20
	24V AC/24V DC				GT3A-3AD24

Time Ranges

(2) Range \ (3) Dial	0 – 1	0 – 3	0 – 6	0 – 18
1S	0.1 sec to 1 sec	0.1 sec to 3 sec	0.1 sec to 6 sec	0.2 sec to 18 sec
10S	0.1 sec to 10 sec	0.3 sec to 30 sec	0.6 sec to 60 sec	1.8 sec to 180 sec
10M	6 sec to 10 min	18 sec to 30 min	36 sec to 60 min	108 sec to 180 min
10H	6 min to 10 hours	18 min to 30 hours	36 min to 60 hours	108 min to 180 hours

Contact Ratings

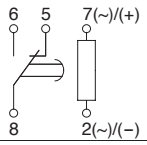
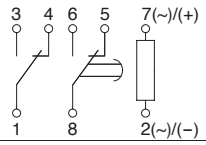
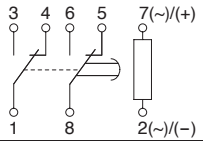
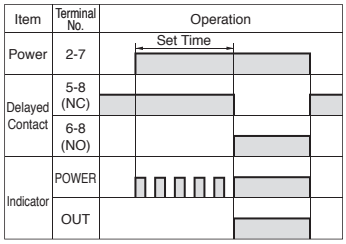
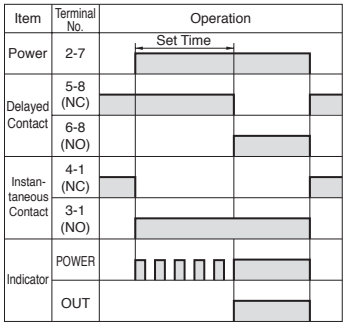
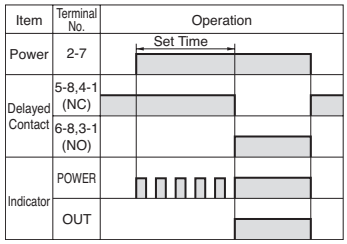
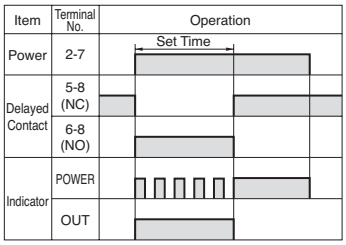
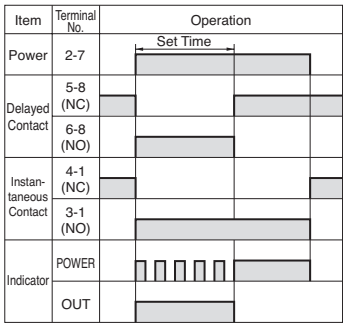
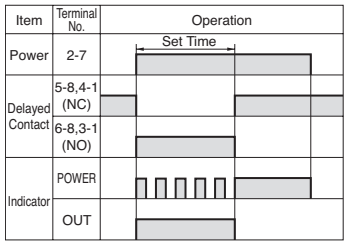
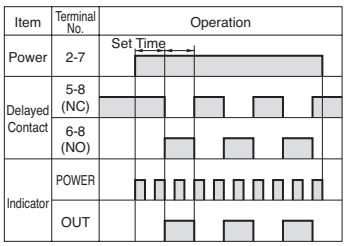
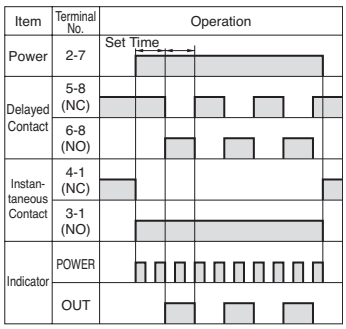
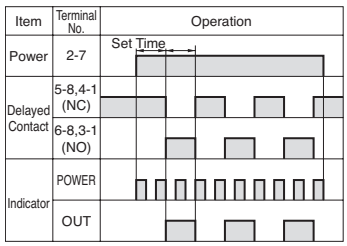
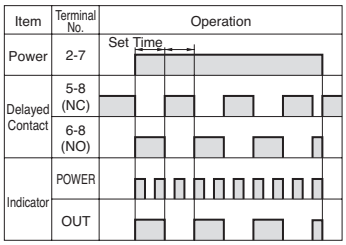
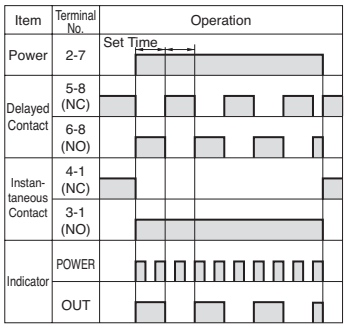
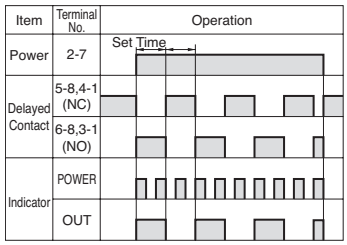
Type		GT3A-1, GT3A-2	GT3A-3
Rated Load		240V AC, 3A (resistive load) 120V AC/30V DC, 5A (resistive load)	240V AC/24V DC, 5A (resistive load)
Maximum Switching Power		AC: 960VA DC: 120W	AC: 1200VA DC: 120W
Maximum Switching Voltage		250V AC/150V DC	
Maximum Switching Current		5A	
Maximum Switching Frequency		1800 operations/hour	
Minimum Applicable Load		5V DC, 10 mA (reference value)	
External Protection Element		Fuse 250V, 5A	
Life	Electrical	100,000 operations minimum (rated load)	
	Mechanical	20,000,000 operations minimum	

General Specifications

Type			GT3A-1	GT3A-2	GT3A-3
Operation System			Solid-state CMOS circuitry		
Operation Type			Multi-Mode		
Time Range			0.1 sec to 180 hours		
Pollution Degree			2 (IEC60664-1)		
Overvoltage Category			III (IEC60664-1)		
Rated Voltage		AF20	100 to 240V AC (50/60Hz)		
		AD24	24V AC (50/60Hz)/24V DC		
Voltage Range		AF20	85 to 264V AC (50/60Hz)		
		AD24	20.4 to 26.4V AC (50/60Hz)/21.6 to 26.4V DC		
Reset Voltage			Rated voltage 10% minimum		
Operating Temperature			–10 to +50°C (no freezing)		
Storage/Transportation Temperature			–30 to +70°C (no freezing)		
Operating Humidity			35 to 85% RH (no condensation)		
Altitude			0 to 2000m (operation) 0 to 3000m (transportation)		
Reset Time			60 ms maximum		
Repeat Error			±0.2%, ±10 ms maximum (Note)		
Voltage Error			±0.2%, ±10 ms maximum (Note)		
Temperature Error			±0.2%, ±10 ms maximum (Note)		
Setting Error			±10% maximum		
Insulation Resistance			100 MΩ minimum (500V DC megger)		
Dielectric Strength			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 (GT3A-1, 2) 1000V AC, 1 minute (GT3A-3)		
Vibration Resistance			10 to 55 Hz, amplitude 0.75 mm, 2 hours each in 3 directions		
Shock Resistance			Operating extremes: 98 m/s^2, Damage limits: 490 m/s^2, 3 shocks each in 6 directions		
Degree of Protection			IP40 (timer), IP20 (socket) (IEC60529)		
Power Consumption (approx.)	AF20	100V AC 60Hz	2.9VA	2.5VA	2.2VA
		200V AC 60Hz	4.7VA	4.3VA	4.0VA
	AD24 (AC/DC)		1.3VA/0.5W	1.6VA/0.8W	1.8VA/0.7W
Dimensions			40H 36W 72.2D mm		
Weight (approx.)			63g	73g	79g

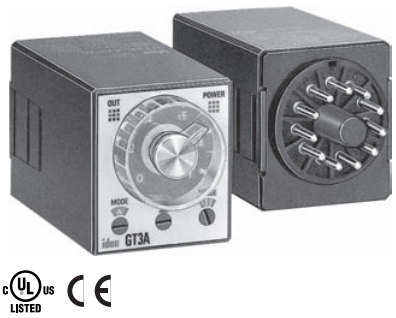
Note: The largest value becomes the error against a preset value depending on the time range.

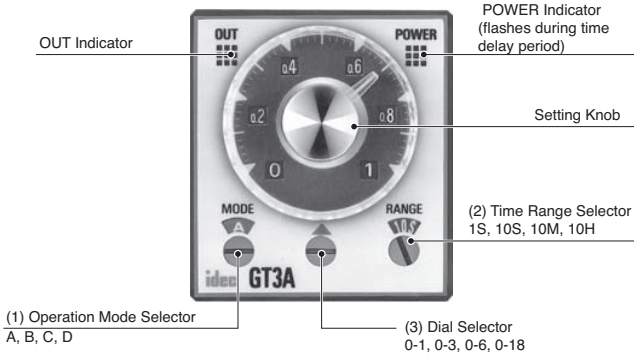
Operation Chart

Operation Chart			
Type No.	GT3A-1 ☐	GT3A-2 ☐	GT3A-3 ☐
Contact	Delayed SPDT	Delayed SPDT + Instantaneous SPDT	Delayed DPDT
Internal Connection / Operation Mode Selection			
On Delay MODE A Set timer for desired delay, apply power to coil. Contacts transfer after preset time has elapsed, and remain in transferred position until timer is reset. Reset occurs with removal of power.			
Interval ON MODE B Set timer for desired delay, apply power to coil. Contacts transfer immediately, and return to original position after preset time has elapsed. Reset occurs with removal of power.			
Cycle OFF (OFF start) MODE C Set timer for desired delay, apply power to coil. First transfer of contacts occurs after preset delay has elapsed, after the next elapse of preset delay contacts return to original position. The timer now cycles between on and off as long as power is applied. The ratio is 1:1. Time Off = Time On			
Cycle ON (ON start) MODE D Functions in same manner as Mode C, with the exception that first transfer of contacts occurs as soon as power is applied. The ratio is 1:1. Time Off = Time On			

GT3A-4, -5, -6

Four Selectable Operation Modes with Start, Gate, and Reset Inputs for External Control





Type List

(1) Operation Mode	Rated Voltage Code	Time Ranges	Output	Contact	Input	Type No.
A: ON Delay B: Cycle OFF C: Signal ON Delay D: Signal OFF Delay	100 to 240V AC	0.1 sec to 180 hours See Time Ranges for details	240V AC, 5A 24V DC, 5A (resistive load)	Delayed DPDT	Start Reset Gate	GT3A-4AF20
	24V AC/24V DC					GT3A-4AD24
A: Interval ON B: One-Shot Cycle, C: Signal ON/OFF Delay D: Signal OFF Delay	100 to 240V AC					GT3A-5AF20
	24V AC/24V DC					GT3A-5AD24
A: One-Shot B: One-Shot ON Delay C: One-Shot D: Signal ON/OFF Delay	100 to 240V AC					GT3A-6AF20
	24V AC/24V DC					GT3A-6AD24

Time Ranges

(2) Range \ (3) Dial	0 – 1	0 – 3	0 – 6	0 – 18
1S	0.1 sec to 1 sec	0.1 sec to 3 sec	0.1 sec to 6 sec	0.2 sec to 18 sec
10S	0.1 sec to 10 sec	0.3 sec to 30 sec	0.6 sec to 60 sec	1.8 sec to 180 sec
10M	6 sec to 10 min	18 sec to 30 min	36 sec to 60 min	108 sec to 180 min
10H	6 min to 10 hours	18 min to 30 hours	36 min to 60 hours	108 min to 180 hours

Contact Ratings

Rated Load		240V AC/24V DC, 5A (resistive load)
Maximum Switching Power		AC: 1200VA DC: 120W
Maximum Switching Voltage		250V AC/150V DC
Maximum Switching Current		5A
Maximum Switching Frequency		1800 operations/hour
Minimum Applicable Load		5V DC, 10 mA (reference value)
External Protection Element		Fuse 250V, 5A
Life	Electrical	100,000 operations minimum (rated load)
	Mechanical	20,000,000 operations minimum

Input Specifications

Start Input	The start input initiates delayed operation and controls output status.	No-voltage contact inputs and NPN open collector transistor inputs are applicable. 24V DC, 1 mA maximum Input response time: 50 ms maximum
Reset Input	When the reset input goes on (L level), the timer is reset to the original time (time at power-on).	
Gate Input	The time delay operation is suspended while the gate input is on (L level).	

General Specifications

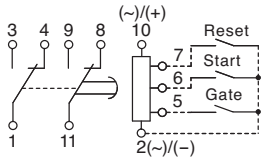
Operation System		Solid-state CMOS circuitry
Operation Type		Multi-mode with inputs (11 pins)
Time Range		0.1 sec to 180 hours
Pollution Degree		2 (IEC60664-1)
Overvoltage Category		III (IEC60664-1)
Rated Voltage	AF20	100 to 240V AC (50/60Hz)
	AD24	24V AC (50/60Hz)/24V DC
Voltage Range	AF20	85 to 264V AC (50/60Hz)
	AD24	20.4 to 26.4V AC (50/60Hz)/21.6 to 26.4V DC
Reset Voltage		Rated voltage 10% minimum
Operating Temperature		–10 to +50°C (no freezing)
Storage/Transportation Temperature		–30 to +70°C (no freezing)
Operating Humidity		35 to 85% RH (no condensation)
Altitude		0 to 2000m (operation) 0 to 3000m (transportation)
Reset Time		60 ms maximum
Repeat Error		±0.2%, ±10 ms (Note)
Voltage Error		±0.2%, ±10 ms (Note)
Temperature Error		±0.2%, ±10 ms (Note)
Setting Error		±10% maximum
Insulation Resistance		100MΩ minimum (500V DC megger)
Dielectric Strength		Between power and output terminals: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Between contacts of the same pole: 1000V AC, 1 minute
Vibration Resistance		10 to 55 Hz, amplitude 0.75 mm, 2 hours each in 3 directions
Shock Resistance		Operating extremes: 98 m/s^2 Damage limits: 490 m/s^2 3 shocks each in 6 directions
Degree of Protection		IP40 (timer), IP20 (socket) (IEC60529)
Power Consumption (Approx.)	AF20	2.2VA (100V AC/60Hz), 4.1VA (200V AC/60Hz)
	AD24	1.8VA (AC)/0.7W (DC)
Dimensions		40H 36W 72.2D mm
Weight (approx.)		80g

Note: The largest value becomes the error against a preset value depending on the time range.

Operation Chart

GT3A-4 ☐

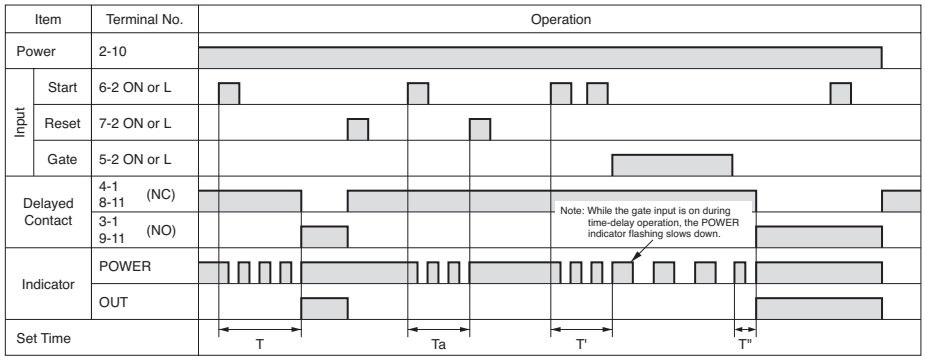
Note: While the gate input is on during time delay operation, the POWER indicator flashing slows down.

	Operation Chart
Contact	Delayed DPDT
Internal Connection / Operation Mode Selection	 Note: T = Set time, Ta = Shorter than set time, T = T' + T''

On Delay

MODE A

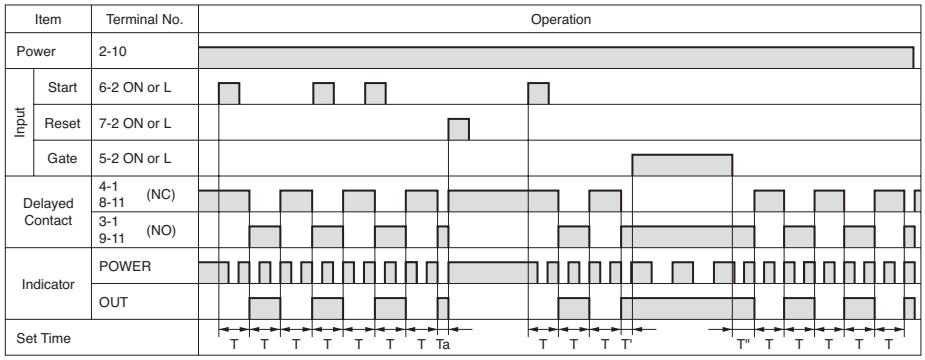
Power is applied to timer at all times. Set time for desired delay. When start input is supplied time delay starts, contacts transfer after preset time has elapsed. Contacts remain in transferred position until timer is reset.



Cycle

MODE B

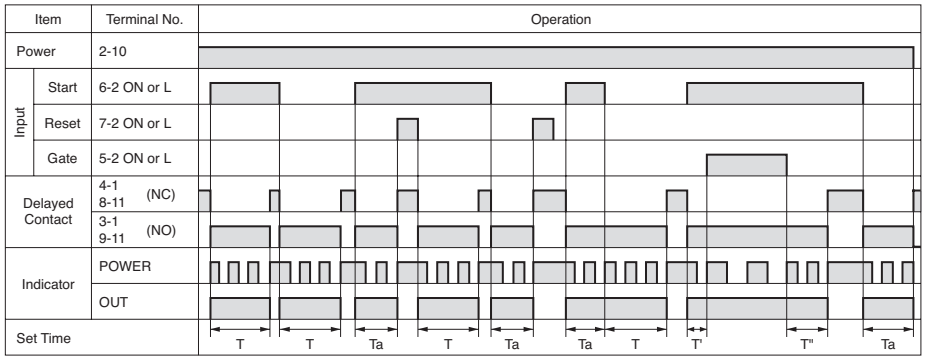
Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts transfer after preset time has elapsed and remain in transferred position until preset time elapses a second time. The timer will now continue to cycle in above manner until reset applied.



Signal ON/OFF Delay

MODE C

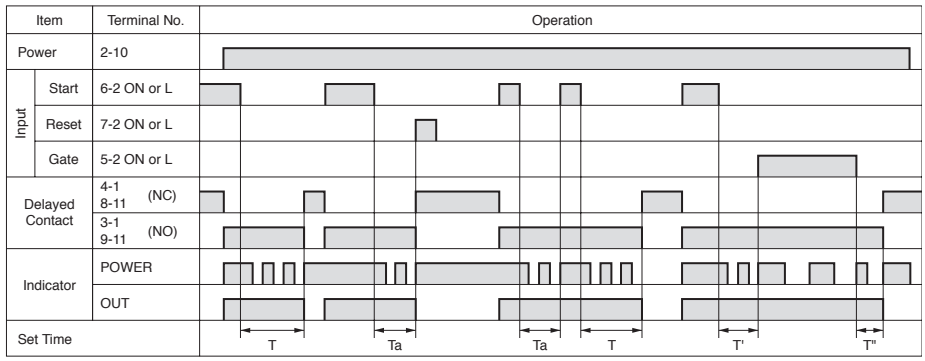
For this mode a maintained pushbutton is required for start input. Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts will transfer immediately. After preset time (with start input still present) contacts will transfer back to original position. Remove start signal, at this time contacts will again transfer. Contacts will transfer to original position after preset time. Timer is reset by initiation of reset input.



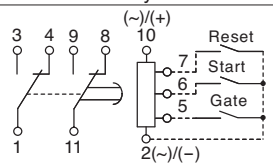
Signal OFF Delay

MODE D

Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts immediately transfer. When start input is removed time delay starts. After preset time contacts transfer back to original position. Timer is reset by initiation of reset input.



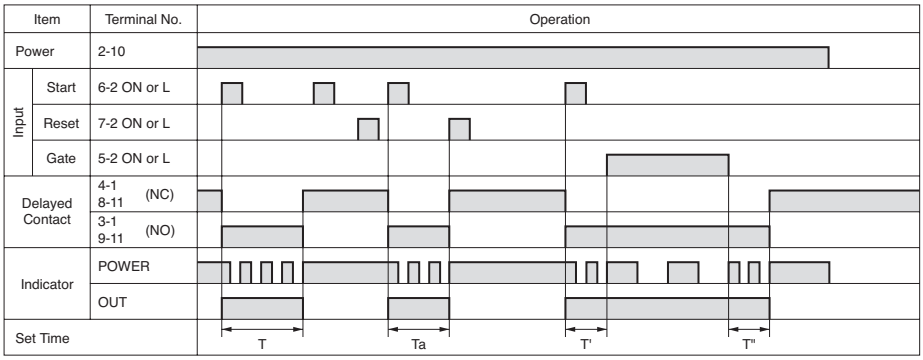
GT3A-5 ☐

	Operation Chart
Contact	Delayed DPDT
Internal Connection / Operation Mode Selection	 Note: T = Set time, Ta = Shorter than set time, T = T' + T''

Interval ON

MODE A

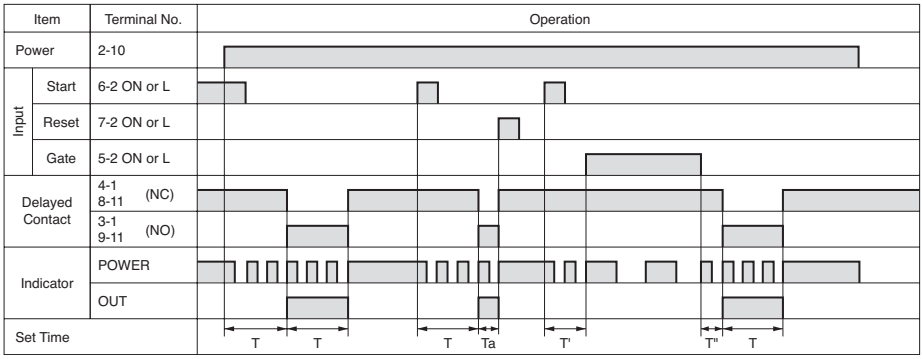
Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts immediately transfer. After preset delay contacts return to original position. Timer is reset by initiation of reset input.



One-Shot Cycle

MODE B

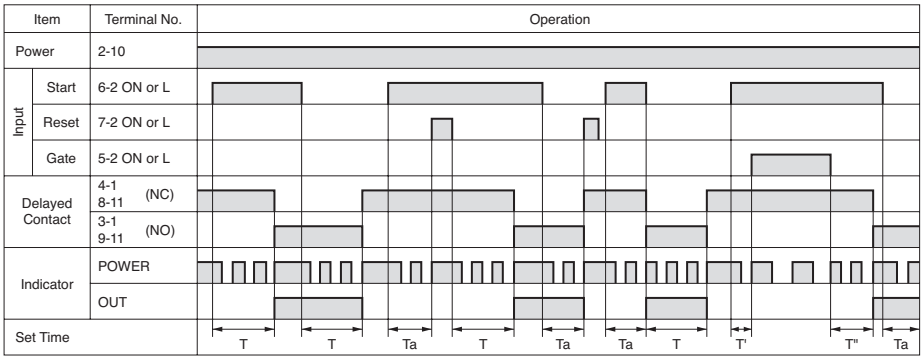
Power is applied to timer at all times. Set timer for desired delay, initiate start input. After preset time has elapsed contacts will transfer. Contacts will transfer to their original position after preset time elapses a second time. Timer is reset by initiation of reset input.



Signal ON/OFF Delay

MODE C

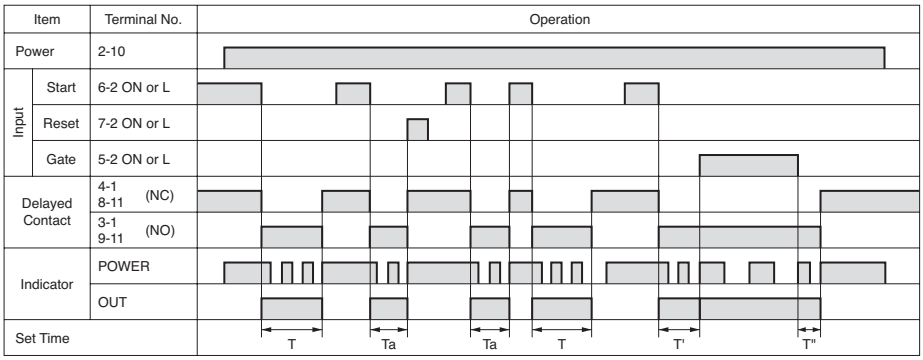
For this mode a maintained pushbutton is required for start input. Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts will transfer immediately. After preset time (with start input still present) contacts will transfer back to original position. Remove start signal, at this time contacts will again transfer. Contacts will transfer to original position after preset time. Timer is reset by initiation of reset input.



Signal OFF Delay

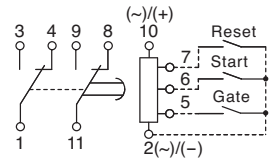
MODE D

Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts immediately transfer. When start input is removed time delay starts. After preset time contacts transfer back to original position. Timer is reset by initiation of reset input.



GT3A-6☐

Operation Mode Selection / Internal Connection	Operation Chart
Contact	Delayed DPDT

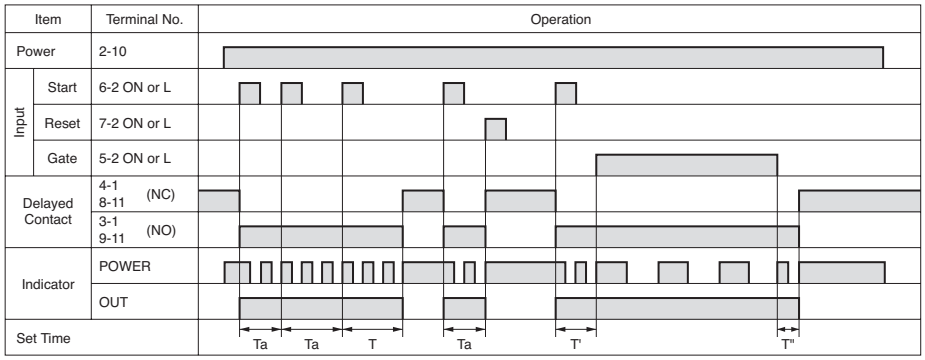


Note: T = Set time
Ta = Shorter than set time
T = T' + T''

One Shot

MODE A

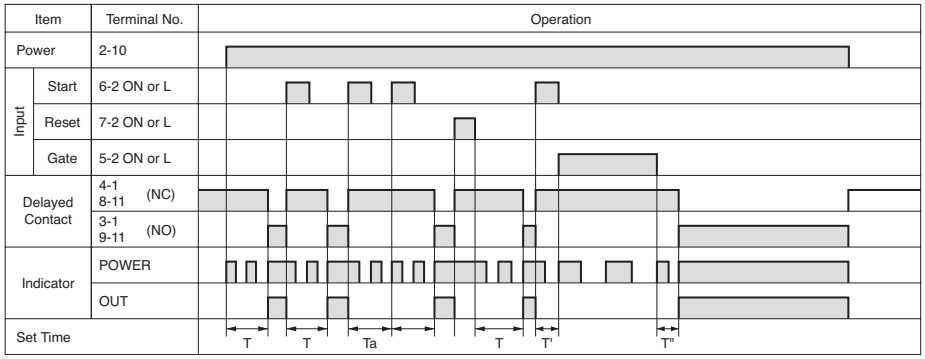
Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts immediately transfer. After preset time has elapsed contacts transfer back to original position. Reset occurs with initiation of reset input.



One Shot ON Delay

MODE B

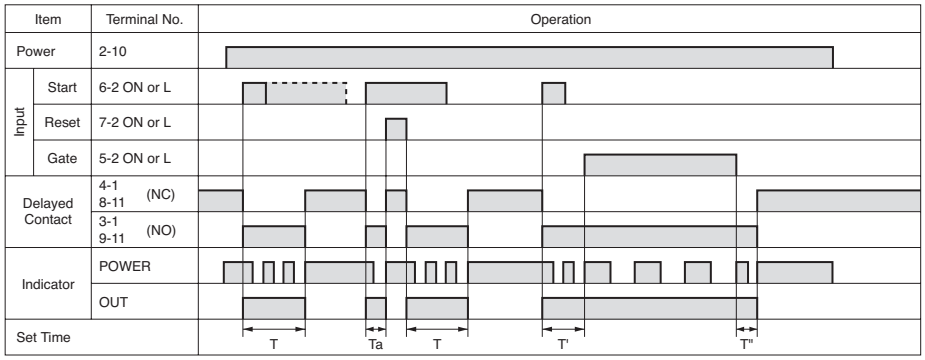
Set timer for desired delay. When power is applied preset time begins and contacts transfer after preset time has elapsed (no start input needed at this time). Start input is now supplied, this causes the contacts to transfer back to original position. Contacts will remain in this position for preset time, after which they will transfer again. Contacts will now remain in this position until: reset, start input is applied again or power is removed.



One Shot

MODE C

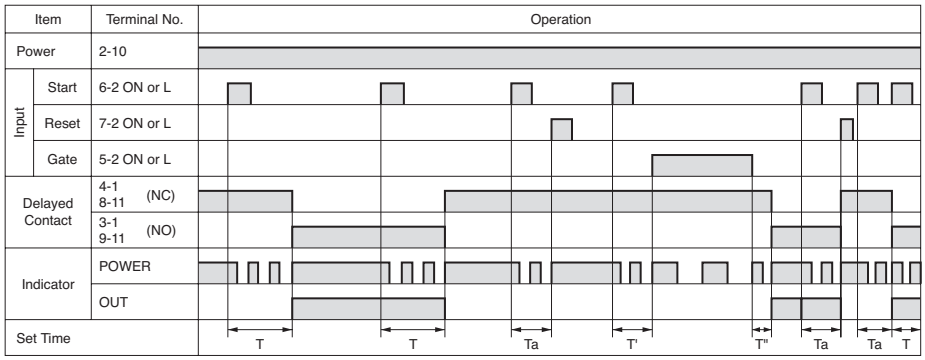
Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts immediately transfer. After preset time has elapsed contacts transfer back to original position. Reset occurs with initiation of reset input.



Signal ON/OFF Delay

MODE D

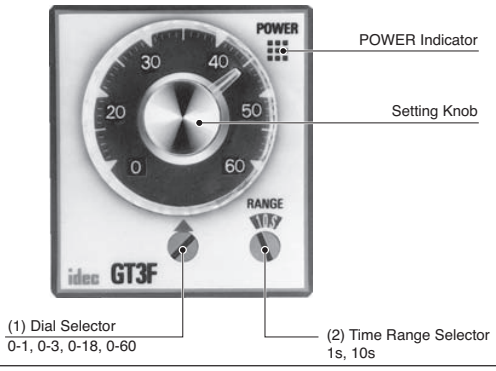
For this mode a maintained pushbutton is required for start input. Power is applied to timer at all times. Set timer for desired delay, initiate start input. Contacts will transfer immediately. After preset time (with start input still present) contacts will transfer back to original position. Remove start signal, at this time contacts will again transfer. Contacts will transfer to original position after preset time. Timer is reset by initiation of reset input.



GT3F-1/GT3F-2

Specifically designed type for Power OFF Delay. Reset Inputs are available.

GT3F-1 ☐
GT3F-2 ☐



Type List

(1) Operation Mode	Rated Voltage Code	Time Ranges	Output	Contact	Input	Type No.
Power OFF Delay	100 to 240V AC	0.1 sec to 600 sec	250V AC /30V DC, 5A	Delayed SPDT	Reset	GT3F-1AF20
	24V AC/24V DC					GT3F-1AD24
	100 to 240V AC		250V AC /30V DC, 3A	Delayed DPDT	Without	GT3F-2AF20
	24V AC/24V DC					GT3F-2AD24

Time Ranges

GT3F-1/GT3F-2

(2) Range \ (3) Dial	0 – 1	0 – 3	0 – 18	0 – 60
1S	0.1 sec to 1 sec	0.1 sec to 3 sec	0.2 sec to 18 sec	0.6 sec to 60 sec
10S	0.1 sec to 10 sec	0.3 sec to 30 sec	1.8 sec to 180 sec	6 sec to 600 sec

Timeout Repeat Cycle	3 sec minimum
Reset Input Repeat Cycle	3 sec minimum

Contact Ratings

Type		GT3F-1	GT3F-2
Rated Load		250V AC/30V DC, 5A (resistive load)	250V AC/30V DC, 3A (resistive load)
Minimum Switching Power		AC: 1250VA DC: 150W	AC: 750VA DC: 90W
Minimum Switching Voltage		250V AC/125V DC	
Minimum Switching Current		5A	3A
Maximum Switching Frequency		1800 operations/hour	
Minimum Applicable Load		5V DC, 10 mA	5V DC, 100 mA
External Protection Element		Fuse 250V, 5A	Fuse 250V, 3A
Life	Electrical	100,000 operations minimum (rated load)	
	Mechanical	10,000,000 operations minimum	

Input Specifications

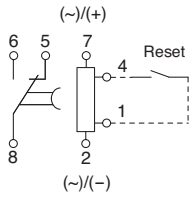
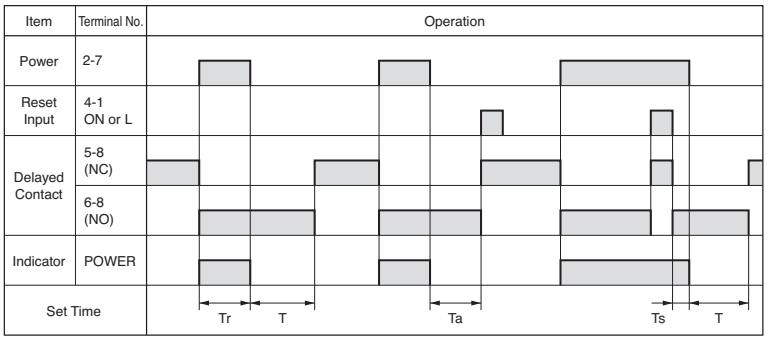
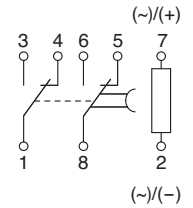
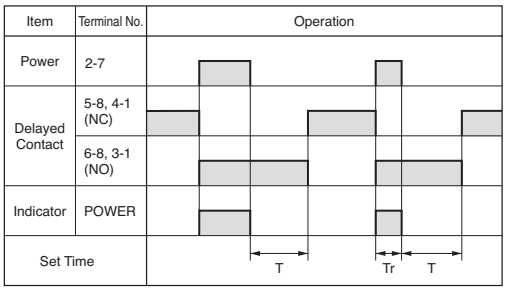
Reset Input	The contact is reset by turning the reset input on (L level). No-voltage contact input and NPN open collector transistor input are applicable. 6V DC, 0.6 mA maximum Input Response Time (AC Type): ON: 50 ms maximum OFF: 1 sec maximum

General Specifications

Operation System		Solid-state CMOS circuitry
Operation Type		Power OFF delay
Time Range		0.1 sec to 600 hours
Pollution Degree		2 (IEC60664-1)
Overvoltage Category		III (IEC60664-1)
Rated Voltage	AF20	100 to 240V AC (50/60Hz)
	AD24	24V AC (50/60Hz)/24V DC
Voltage Range	AF20	85 to 264V AC (50/60Hz)
	AD24	20.4 to 26.4V AC (50/60Hz)/21.6 to 26.4V DC
Time Delay Operation Start Voltage		Rated Voltage 10% minimum
Minimum Power Application Time (Note 1)		0.4 sec (time range: 180 sec or less) 1 sec (time range: 600 sec)
Operating Temperature		–10 to +50°C (no freezing)
Storage/Transportation Temperature		–30 to +70°C (no freezing)
Operating Humidity		35 to 85% RH (no condensation)
Altitude		0 to 2000m (operation) 0 to 3000m (transportation)
Repeat Error		±0.2%, ±10 ms (Note 2)
Voltage Error		±0.2%, ±10 ms (Note 2)
Temperature Error		±0.2%, ±10 ms (Note 2)
Setting Error		±10% maximum
Insulation Resistance		100 MΩ min. (500V DC megger)
Dielectric Strength		Between power and output terminals: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Between contacts of the same pole: 1000V AC, 1 minute
Vibration Resistance		10 to 55Hz, amplitude 0.75 mm, 2 hours each in 3 directions
Shock Resistance		Operating extremes: 98 m/s^2, Damage limits: 490 m/s^2, 3 shocks each in 6 directions
Degree of Protection		IP40 (timer), IP20 (socket) (IEC60529)
Power Consumption (approx.)	AF20	1.1 VA (100V AC/60Hz), 2.3 VA (200V AC/60Hz)
	AD24	0.7 VA (AC)/0.2W (DC)
Dimensions		40H 36W 72.2D mm
Weight (approx.)		GT3F-1: 77g; GT3F-2: 79g

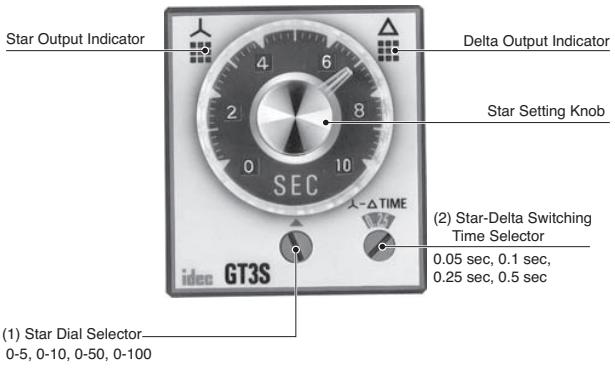
Note 1: An inrush current flows during minimum power application time.
AF20: Approx. 0.4A, AD24: Approx. 1.2A
Note 2: The largest value becomes the error against a preset value depending on the time range.

Operation Chart

Contact	Internal Connection	Operation Chart
GT3F-1 Delayed SPDT Output with Reset Input		 T = Set time Ta = Shorter than set time Ts = 1 sec Tr = Minimum power application time 0.4 sec (time range: 180 sec or less) 1 sec (time range: 600 sec or less) When power turns on, the NO output contact goes on. When a preset time has elapsed after the power has been turned off, the NO output contact goes off. The contact is reset by turning the reset input on.
GT3F-2 Delayed DPDT Output		 T = Set time Tr = Minimum power application time 0.4 sec (time range: 180 sec or less) 1 sec (time range: 600 sec or less) When power turns on, the NO output contact goes on. When a preset time has elapsed after the power has been turned off, the NO output contact goes off.

GT3S-1/GT3S-2

Star-Delta Output Mode



Type List

(1) Operation Mode	Rated Voltage	Time Range	Output	Contact	Type No.
Star-Delta	100 to 240V AC	Star: 0.05 to 100 sec Star-Delta switching time 0.05 sec 0.10 sec 0.25 sec 0.50 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	Indication	Time
0 – 5	0.05 sec – 5 sec	0.05	0.05 sec
0 – 10	0.1 sec – 10 sec	0.1	0.1 sec
0 – 50	0.5 sec – 50 sec	0.25	0.25 sec
0 – 100	1 sec – 100 sec	0.5	0.5 sec

Contact Ratings

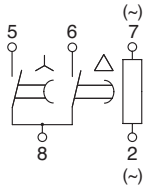
Rated Load		250V AC/30V DC, 5A (resistive load)
Maximum Switching Power		AC: 1250VA DC: 150W
Maximum Switching Voltage		265V AC/125V DC
Maximum Switching Current		5A
Maximum Switching Frequency		1800 operations/hour
Minimum Applicable Load		5V DC, 100mA (reference value)
External Protection Element		Fuse 250V, 5A
Life	Electrical	100,000 operations minimum (rated load)
	Mechanical	20,000,000 operations minimum

General Specifications

Operation System	Solid-state CMOS circuitry	
Operation Type	Star-delta	
Time Range	Star side: 0.05 sec to 100 sec Star delta switching time: 0.05, 0.1, 0.25, 0.5 sec	
Pollution Degree	2 (IEC60664-1)	
Overvoltage Category	III (IEC60664-1)	
Rated Voltage	100 to 240V AC (50/60Hz)	
Voltage Range	85 to 264V AC (50/60Hz)	
Reset Voltage	Rated Voltage 10% minimum	
Operating Temperature	–10 to +50°C (no freezing)	
Storage/Transportation Temperature	–30 to +70°C (no freezing)	
Operating Humidity	35 to 85% RH (no condensation)	
Altitude	0 to 2000m (operation) 0 to 3000m (transportation)	
Reset Time	500 ms maximum	
Repeat Error	±0.2%, ±10 ms (Note)	
Voltage Error	±0.2%, ±30 ms (Note)	
Temperature Error	±0.2%, ±10 ms (Note)	
Setting Error	±10% maximum	
Insulation Resistance	100 MΩ minimum (500V DC megger)	
Dielectric Strength	Between power and output terminals: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Between contacts of the same pole: 1000V AC, 1 minute	
Vibration Resistance	10 to 55 Hz, amplitude 0.75 mm, 2 hours each in 3 directions	
Shock Resistance	Operating extremes: 98 m/s^2, Damage limits: 490 m/s^2, 3 shocks each in 6 directions	
Degree of Protection	IP40 (timer), IP20 (socket) (IEC60529)	
Power Consumption (approx.)	GT3S-1AF20	GT3S-2AF20
	2.3VA (100V AC/60Hz)	2.3VA (100V AC/60Hz)
	4.0VA (200V AC/60Hz)	3.8VA (200V AC/60Hz)
Dimensions	40H 36W 72.2D mm	
Weight (approx.)	GT3S-1AF20	GT3S-2AF20
	68g	75g

Note: The largest value becomes the error against a preset value depending on the time range.

Operation Chart

<table>
<tr><th>Contact</th><th>Internal Connection</th><th>Operation Chart</th></tr>
<tr>
<td>GT3S-1
Star : Delayed SPST-NO
Delta: Delayed SPST-NO</td>
<td> 
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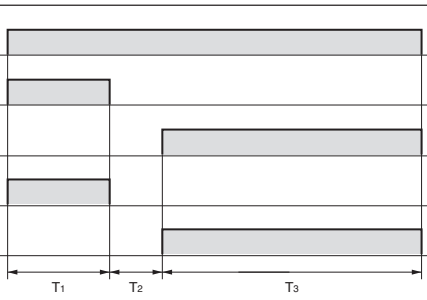
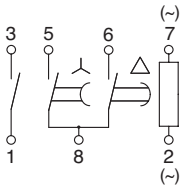
<td>
<table>
<tr><th>Item</th><th>Terminal No.</th><th>Operation</th></tr>
<tr><td>Power</td><td>2-7</td><td rowspan="5"> 
</td></tr>
<tr><td>Star Delayed Contact</td><td>8-5 (NO)</td></tr>
<tr><td>Delta Delayed Contact</td><td>8-6 (NO)</td></tr>
<tr><td rowspan="2">Indicator</td><td>Star</td></tr>
<tr><td>Delta</td></tr>
<tr><td>Set Time</td><td colspan="2"></td></tr>
</table>
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 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 swithing time, T_3 = Star ON time
</td>
</tr>
<tr>
<td>GT3S-2
Star : Delayed SPST-NO
Delta: Delayed SPST-NO
Instantaneous SPST-NO</td>
<td> 
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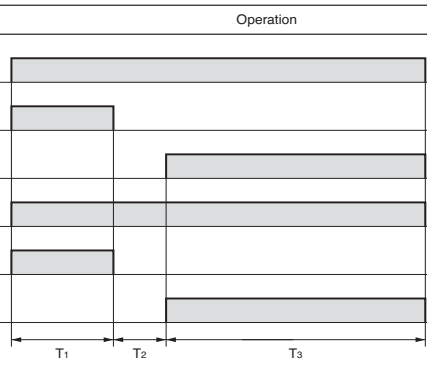
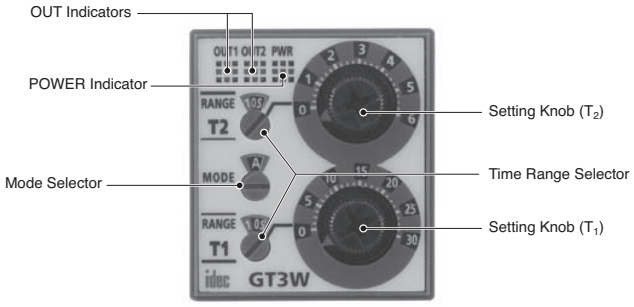
<table>
<tr><th>Item</th><th>Terminal No.</th><th>Operation</th></tr>
<tr><td>Power</td><td>2-7</td><td rowspan="6"> 
</td></tr>
<tr><td>Star Delayed Contact</td><td>8-5 (NO)</td></tr>
<tr><td>Delta Delayed Contact</td><td>8-6 (NO)</td></tr>
<tr><td>Instantaneous contact</td><td>3-1 (NO)</td></tr>
<tr><td rowspan="2">Indicator</td><td>Star</td></tr>
<tr><td>Delta</td></tr>
<tr><td>Set Time</td><td colspan="2"></td></tr>
</table>
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 contact goes on after star-delta switching time (T_2) and goes off when power is turned off.
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 swithing time, T_3 = Star ON time
</td>
</tr>
</table>

GT3W-A11, -A13, -A31, A33

Multi-range Twin-Timer type with 8 operation modes



Type List

(1) Operation Mode	Rated Voltage	Time Ranges T_1	Time Ranges T_2	Type No.
Sequential Start Coarse/Fine Adjustment Instantaneous Cycle Cycle Cycle Inversion Interval ON Interval ON Delay Sequential Interval	100 to 240V AC	0.1 sec to 6 hours	0.1 sec to 6 hours	GT3W-A11AF20N
	24V AC/24V DC			GT3W-A11AD24N
	100 to 240V AC		0.1 sec to 300 hours	GT3W-A13AF20N
	24V AC/24V DC			GT3W-A13AD24N
	100 to 240V AC	0.1 sec to 300 hours	0.1 sec to 6 hours	GT3W-A31AF20N
	24V AC/24V DC			GT3W-A31AD24N
	100 to 240V AC		0.1 sec to 300 hours	GT3W-A33AF20N
	24V AC/24V DC			GT3W-A33AD24N

Time Ranges

0.1 sec to 6 hours			0.1 sec to 300 hours		
Time Range Selector	Scale	Time Range	Time Range Selector	Scale	Time Range
1S	0 – 1	0.1 sec to 1 sec	1S	0 – 3	0.1 sec to 3 sec
10S		0.3 sec to 10 sec	1M		3.8 sec to 3 min
10M		15 sec to 10 min	1H		3.8 min to 3 hours
1S	0 – 6	0.1 sec to 6 sec	1S	0 – 30	0.6 sec to 30 sec
10S		1.3 sec to 60 sec	1M		38 sec to 30 min
1M		7.5 sec to 1 min	1H		38 min to 30 hours
10M		75 sec to 60 min	10H		6.3 hours to 300 hours
1H		7.5 min to 6 hours			

Contact Ratings

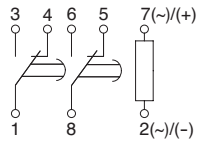
Rated Load		240V AC, 3A (resistive load) 120V AC/ 30V DC, 5A (resistive load)
Maximum Switching Power		AC: 960VA DC: 120W
Maximum Switching Voltage		250V AC/150V DC
Maximum Switching Current		5A
Maximum Switching Frequency		1800 operations/hour
Minimum Applicable Load		5V DC, 10mA (reference value)
External Protection Element		Fuse 250V, 5A
Life	Electrical	100,000 operations minimum (rated load)
	Mechanical	20,000,000 operations minimum

General Specifications

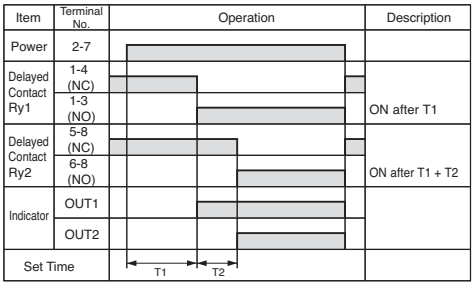
Operation System		Solid-state CMOS circuitry
Operation Type		Multi-Mode
Time Range		0.1 sec to 300 hours
Pollution Degree		2 (IEC60664-1)
Overvoltage Category		III (IEC60664-1)
Rated Range	AF20	100 to 240V AC (50/60Hz)
	AD24	24V AC (50/60Hz)/ 24V DC
Voltage Range	AF20	85 to 264V AC (50/60Hz)
	AD24	20.4 to 26.4V AC (50/60Hz)/21.6 to 26.4V DC
Reset Voltage		Rated voltage 10% minimum
Operating Temperature		–10 to +50°C (no freezing)
Storage/Transportation Temperature		–30 to +70°C (no freezing)
Operating Humidity		35 to 85% RH (no condensation)
Altitude		0 to 2000m (operation) 0 to 3000m (transportation)
Reset Time		60 ms maximum
Repeat Error		±0.2%, ±10 ms (Note)
Voltage Error		±0.2%, ±10 ms (Note)
Temperature Error		±0.2%, ±10 ms (Note)
Setting Error		±10% maximum
Insulation Resistance		100 MΩ minimum (500V DC megger)
Dielectric Strength		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
Vibration Resistance		10 to 55Hz, amplitude 0.75 mm, 2 hours each in 3 directions
Shock Resistance		Operating extremes: 98 m/s^2 Damage limits: 490 m/s^2 3 shocks each in 6 directions
Degree of Protection		IP40 (timer), IP20 (socket) (IEC60529)
Power Consumption (approx.)	AF20	2.3VA (100V AC /60Hz) 4.6VA (200V AC /60Hz)
	AD24	1.8VA (AC)/0.9W (DC)
Dimensions		40H 36W 70.0D mm
Weight (approx.)		73g

Note: The largest value becomes the error against a preset value depending on the time range.

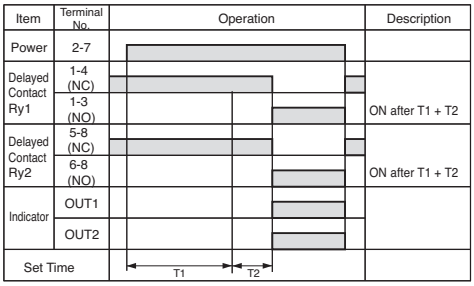
Operation Chart

Operation Chart	
Contact	Delayed SPDT + Delayed SPDT
Internal Connection / Operation Mode Selection	

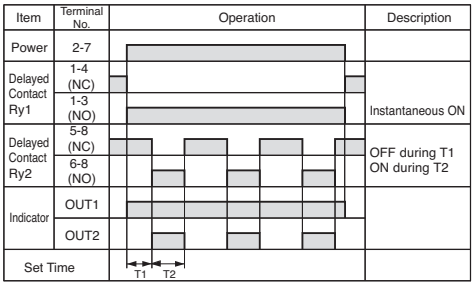
Sequential Start — A



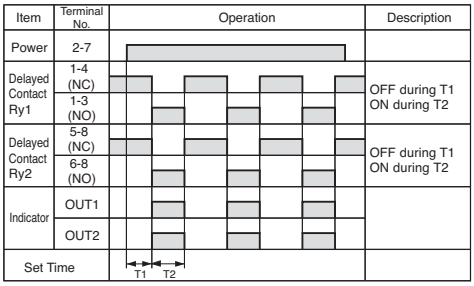
Coarse/Fine Adjustment — B

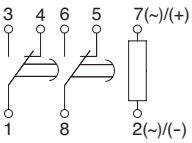


Instantaneous Cycle — C

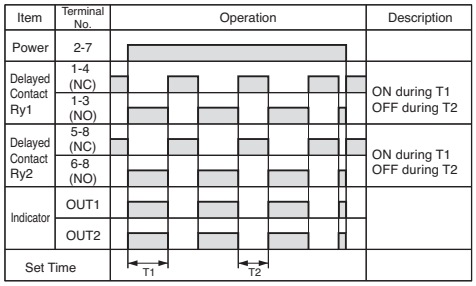


Cycle — D

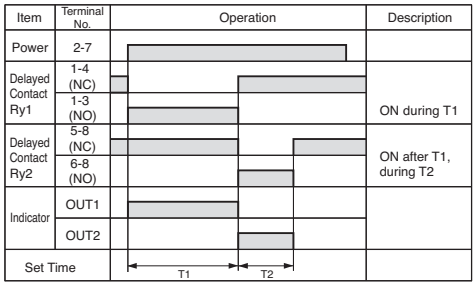


Operation Chart	
Contact	Delayed SPDT + Delayed SPDT
Internal Connection / Operation Mode Selection	

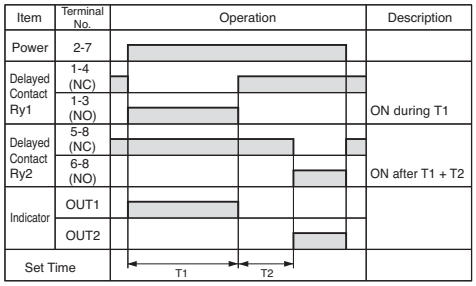
Cycle Inversion — E



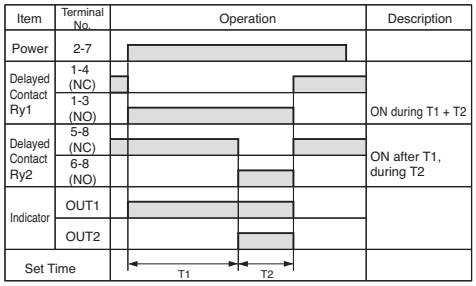
Interval ON — F



Interval ON Delay — G



Sequential Interval — H



Applicable Sockets & Hold-Down Springs (Optional)

DIN Rail Mount Socket

Item		Type No.	Ordering Type No.	Package Quantity	Remarks
Socket	8-Pin Screw Terminal	SR2P-05A	SR2P-05A	1	
		SR2P-06A	SR2P-06A	1	
		SR2P-05C	SR2P-05C	1	Finger-safe type
	11-Pin Screw Terminal	SR3P-05A	SR3P-05A	1	
		SR3P-06A	SR3P-06A	1	
		SR3P-05C	SR3P-05C	1	Finger-safe type
Hold-Down Spring		SFA-202	SFA-202PN20	10 sets (20 pcs)	For SR2P-06A/SR3P-06A (2 pcs/set)
		SFA-203	SFA-203PN20	10 sets (20 pcs)	For SR3P-05A (2 pcs/set)

Note: All are UL recognized, CSA certified, and TÜV approved.

SR2P-06A

SR3P-05A

SR3P-06A

SFA-202 (2 pcs/set)

SFA-203 (2 pcs/set)

Panel Mount Socket

Item		Type No.	Ordering Type No.	Package Quantity	Remarks
Socket	8-Pin Solder Terminal	SR2P-511	SR2P-511	1	
	11-Pin Solder Terminal	SR3P-511	SR3P-511	1	
Hold-Down Spring		SFA-402	SFA-402PN10	10	For SR2P-511/SR3P-511

Note: SR2P-511 and SR3P-511 are UL recognized and CSA certified.

SR2P-511

SR3P-511

SFA-402

Panel Mount Adapter and wiring Socket Adapter

Package Quantity: 1

Item		Type No.
DIN 48mm Square Panel Mount Adapter 	Color: Gray	RTB-G01
	Color: Beige	RTB-M01
	Color: Black	RTB-B01
Wiring Socket Adapter	8-Pin Solder Terminal	SR6P-S08
	8-Pin Screw Terminal	SR6P-M08G
	11-Pin Solder Terminal	SR6P-S11
	11-Pin Screw Terminal	SR6P-M11G

Finger-safe 11-pin screw wiring socket adapter (Type No.: SR6P-C11) is also available.

(8-pin Wiring Socket Adapter)
SR6P-S08

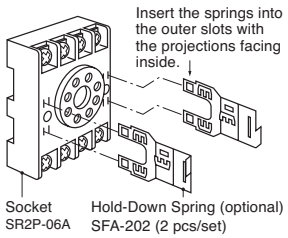
(11-pin Wiring Socket Adapter)
SR6P-S11

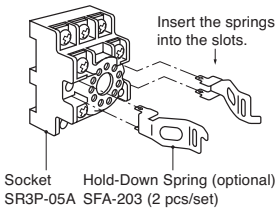
(8-pin Screw Wiring Socket Adapter)
SR6P-M08G

(11-pin Screw Wiring Socket Adapter)
SR6P-M11G

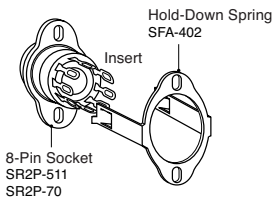
Installation of Hold-Down Springs

(DIN Rail Mount Socket)





(Panel Mount Socket)



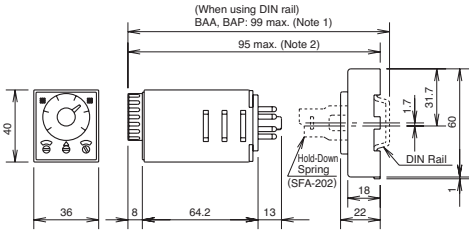
Note: Once installed into the socket, the hold-down springs cannot be removed.

Dimensions

When Using DIN Rail Mount Socket

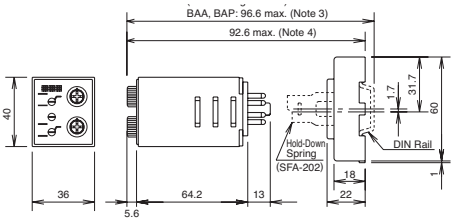
(SR2P-06A Socket)

GT3A-1, -2, -3/GT3F/GT3S (8-pin)



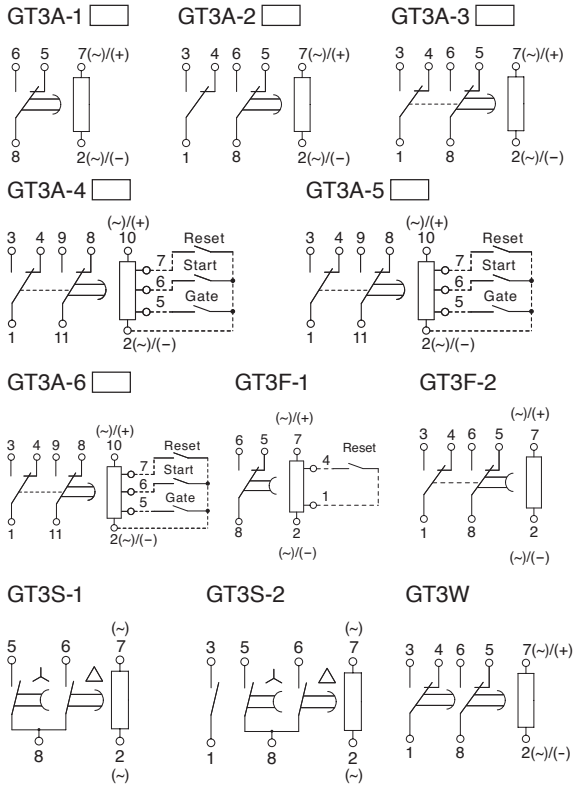
Note 1: For SR2P-05A: 105.5 max.
For SR2P-05C: 107 max.
Note 2: For SR2P-05A: 101.5 max.
For SR2P-05C: 103 max.

GT3W



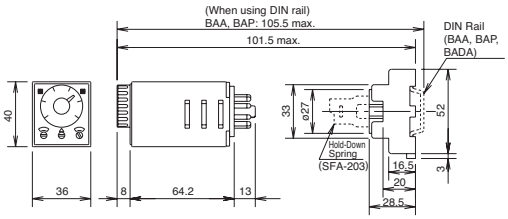
Note 3: For SR2P-05A: 103.1 max
For SR2P-05C: 104.6 max.
Note 4: For SR2P-05A: 99.1 max.
For SR2P-05C: 100.6 max.

[Internal Connections]

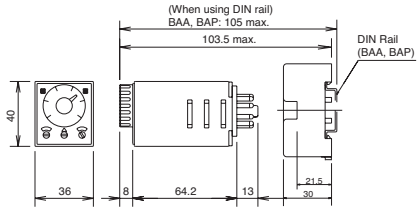


GT3A-4, -5, -6 (11-pin)

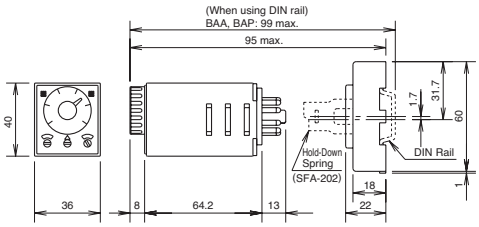
(SR3P-05A Socket)



(SR3P-05C Socket)



(SR3P-06A Socket)

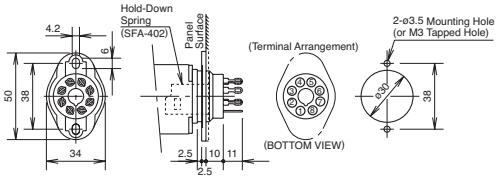


Calculate the dimensions for mounting, referring to the diagrams on pages 1109 and 1100 for SR2P-05U, SR2P-05C, and SR3P-05C.

When Using Panel Mount Socket

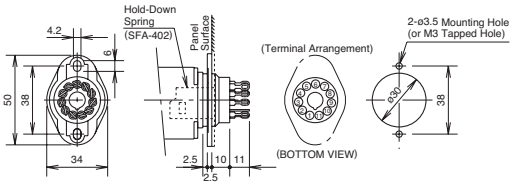
GT3A-1, -2, -3/GT3F/GT3S/GT3W (8-pin)

(SR2P-511 Socket)



GT3A-4, -5, -6

(SR3P-511 Socket)

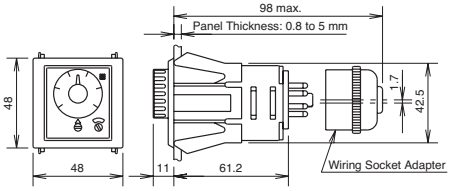


All dimensions in mm.

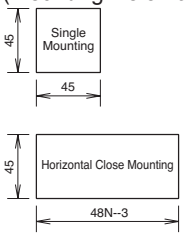
All GT3 Series

When using DIN 48mm-square Panel Mount Adapter

(For 8-pin solder wiring socket adapter: SR6P-S08 and 11-pin solder wiring socket adapter: SR6P-S11)

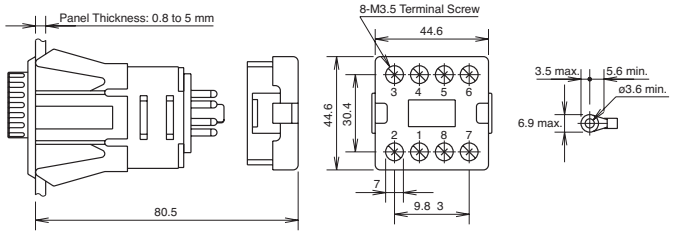


(Mounting Hole Layout)

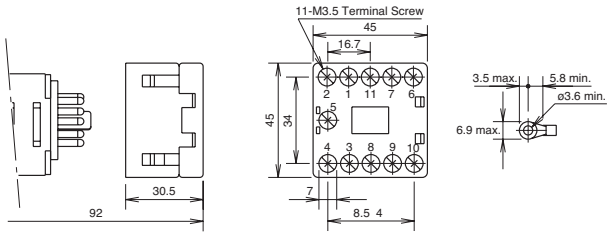


Tolerance: +0.5 to 0
N: No. of timers mounted

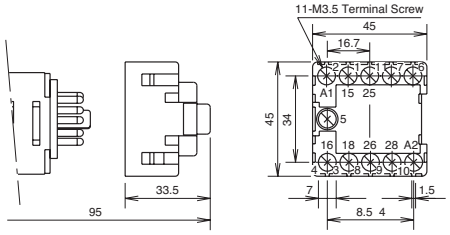
(8-pin Screw Terminal Wiring Socket Adapter: SR6P-M08G)



(11-pin Screw Terminal Wiring Socket Adapter: SR6P-M11G)



(Finger-safe 11-pin Screw Terminal Wiring Socket Adapter: SR6P-C11)



Finger-safe structure complies with VDE 0106 T.100.

All dimensions in mm.

⚠ Safety Precautions

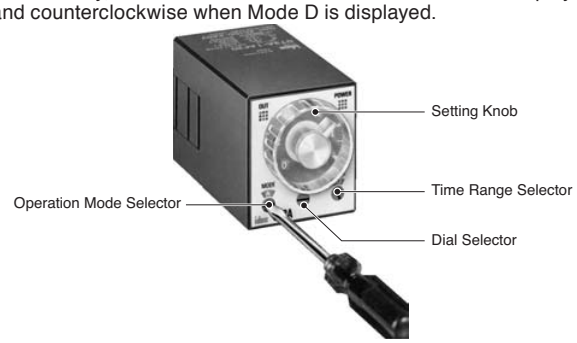
Be sure to turn off power before mounting, removal, wiring, maintenance and inspection. Otherwise, electric shock or fire may occur.
Be sure to use timers within rated specification values. Otherwise electric shock or fire may occur.

Be sure to use wires to meet voltage and current requirements and tighten M3.5 terminal screws to a torque of 1.0 to 1.3 N•m. Be sure to solder the terminals correctly. Loose terminal screws or incomplete soldering may cause abnormal heat and fire.

Instructions

Mode Setting

GT3A only
The operation mode can be selected from A, B, C, and D modes using the Operation Mode Selector. The operation mode is changed from A to B, C, and D in turn by turning the Operation Mode Selector clockwise using a flat screwdriver 4 mm wide maximum and the selected mode is displayed in the window. Since this selector does not turn infinitely, turn the selector clockwise when Mode A is displayed and counterclockwise when Mode D is displayed.



Mode Code and Operation Mode

Type No. / MODE Code	GT3A-1, -2, -3	GT3A-4	GT3A-5	GT3A-6
A	ON Delay	ON Delay	Interval ON	One-Shot
B	Interval ON	Cycle	One Shot Cycle	One-Shot ON Delay
C	Cycle	Signal ON/ OFF Delay	Signal ON/ OFF Delay	One-Shot
D	Cycle ON	Signal OFF Delay	Signal OFF Delay	Signal ON/ OFF Delay

Time Range Setting

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

1. GT3A (Multi-Mode Analog Setting Type)
Time range can be selected from 1S, 10S, 10M, and 10H by turning the Time Range Selector with a flat screwdriver 4 mm wide maximum. The four different ranges of 0 to 1, 0 to 3, 0 to 6, and 0 to 18 are displayed in the six windows by turning the Dial Selector, allowing for selecting the best suited scale. Since the selectors do not turn infinitely, turn the selectors clockwise when 1S or 0-1 is displayed and counterclockwise when 10H or 0-18 is displayed.

Time Range Determined by Time Range Selector and Dial Selector

Dial Selector / Time Range	0 – 1	0 – 3	0 – 6	0 – 18
1S	0.1 sec to 1 sec	0.1 sec to 3 sec	0.1 sec to 6 sec	0.2 sec to 18 sec
10S	0.1 sec to 10 sec	0.3 sec to 30 sec	0.6 sec to 60 sec	1.8 sec to 180 sec
10M	6 sec to 10 min	18 sec to 30 min	36 sec to 60 min	108 sec to 180 min
10H	6 min to 10 hours	18 min to 30 hours	36 min to 60 hours	108 min to 180 hours

The set time is selected by turning the setting knob.

[Setting Examples]
When the setting knob is set at 1.5, with dial 0-3 and time range 10S selected, then the set time is 15 sec (1.5 10S).
When the setting knob is set at 0.2, with dial 0-1 and time range 10H selected, then the set time is 2 hours (0.2 10H).

2. GT3F (OFF Delay Type)
The time range of GT3F-1 and GT3F-2 can be selected between 1S and 10S with the Time Range Selector by using a flat screw driver. The selected time range (0-1, 0-3, 0-18, or 0-60) is displayed in the six windows of the Setting Knob by turning Dial Selector which allows to set the scale. Note that the switches do not turn infinitely.

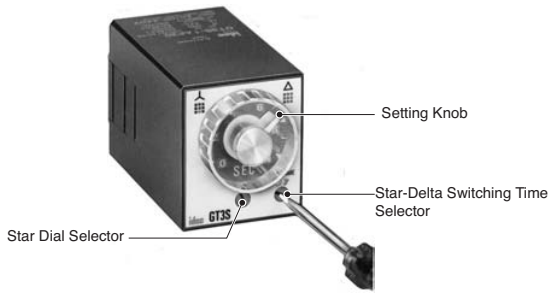
Time Range Determined by Time Range Selector and Dial Selector

(1) Dial / (2) Range	0 – 1	0 – 3	0 – 18	0 – 60
1S	0.1 sec to 1 sec	0.1 sec to 3 sec	0.2 sec to 18 sec	0.6 sec to 60 sec
10S	0.1 sec to 10 sec	0.3 sec to 30 sec	1.8 sec to 180 sec	6 sec to 600 sec

The set time is selected by turning the Setting Knob.

[Setting Examples]
When the setting knob is set at 2.5, with dial 0-3 and range 1S selected, then the set time is 2.5 sec (2.5 1S).
When the setting knob is set at 15, with dial 0-18 and range 10S selected, then the set time is 150 sec (15 10S).

3. GT3S (Star-Delta Type)



The scale range on the star side can be selected from four different ranges of 0 to 5, 0 to 10, 0 to 50, and 0 to 100 displayed in the six windows by turning the Star Dial Selector. Note that the selectors does not turn infinitely.

Time Range Determined by Time Range Selector and Dial Selector

Star Dial Selector		Star-Delta Switching Time Selector	
Dial	Time Range	Indication	Time
0 – 5	0.05 sec – 5 sec	0.05	0.05 sec
0 – 10	0.1 sec – 10 sec	0.1	0.1 sec
0 – 50	0.3 sec – 50 sec	0.25	0.25 sec
0 – 100	1 sec – 100 sec	0.5	0.5 sec

The Star ON time is selected by turning the Setting Knob.

[Setting Examples]
If the setting knob is set at 8, with Star Dial Selector 0-10 and Star-Delta switching time 0.1S selected, the Star ON time (T_1) is 8 sec and the Star-Delta switching time (T_2) is 0.1 sec.

4. GT3W [Twin-Timer Type]

Use a flat screwdriver with a diameter of 4 mm maximum to turn Time Range Selector and gain time range as shown in the table below. Note that the selectors do not turn infinitely.

Time Range Determined by Time Range Selector and Dial Selector

0.1 sec to 6 hours			0.1 sec to 300 hours		
Time Range Selector	Scale	Time Range	Time Range Selector	Scale	Time Range
1S	0 – 1	0.1 sec to 1 sec	1S	0 – 3	0.1 sec to 3 sec
10S		0.3 sec to 10 sec	1M		3.8 sec to 3 min
10M		15 sec to 10 min	1H		3.8 min to 3 hours
1S	0 – 6	0.1 sec to 6 sec	1S	0 – 30	0.6 sec to 30 sec
10S		1.3 sec to 60 sec	1M		38 sec to 30 min
1M		7.5 sec to 1 min	1H		38 min to 30 hours
10M		75 sec to 60 min	10H		6.3 hours to 300 hours
1H		7.5 min to 6 hours			

Note: No blank time range can be set.

Selector Setting

Use a flat screwdriver with a diameter of 4 mm maximum to turn the selector. Turn the selector until it clicks. Otherwise, malfunction may occur. Also, do not rotate the selector forcibly since the selector does not turn infinitely.
Since changing the setting during operation may cause malfunction, turn power off before changing the setting.

Power

Since DC types have a polarity in their power supply connection, connect the power according to wiring diagram.
Since AC type GT3A, GT3S, and GT3W comprise a capacitive load, the SSR dielectric strength should be two or more times as large as the power voltage when switching the timer power using an SSR.
Storage temperature should range from −25°C to +80°C. If the product has been stored at a temperature below −10°C, leave the product at room temperatures for more than 3 hours before using.
Do not remove the housing.

Wiring

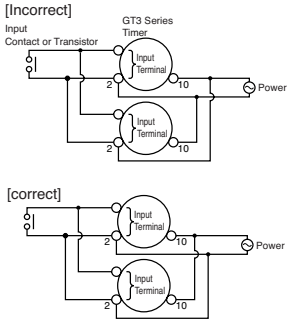
The GT3F, consisting of a high-impedance circuit, may not be reset due to the influence of an inductive voltage or residual voltage caused by a leakage current. In not reset, connect an RC filter or bleeder resistor between power terminals so that the voltage between power terminals can be reduced to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

Inputs of GT3A and GT3F

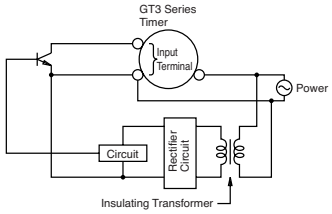
To avoid electric shock, do not touch the input signal terminal during power voltage application.

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.)

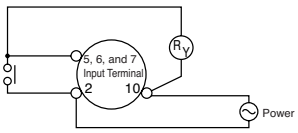
Never apply the input signals to two or more GT3F timers using the same contact or transistor.



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



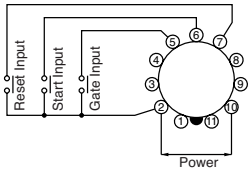
Do not connect input signal terminals of the GT3A timer to other terminals than No. 2. Never apply voltage to input signal terminals. Otherwise, the internal circuit may be damaged.



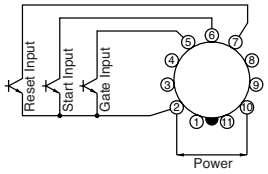
Do not connect input signal terminals of the GT3F timer to other terminals than No. 2. Never apply voltage to input signal terminals. Otherwise, the internal circuit may be damaged.

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

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

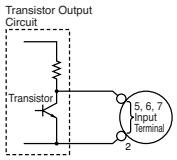


For transistor input, use transistors with following specifications; V_{CE} = 40V, V_{CES} = 1V or less, I_C = 50mA or more, I_{CBO} = 50µA or less. The resistance should be less than 1kΩ when the transistor is on. When the output transistor switches on, a signal is inputted to the timer.



GT3A

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



GT3F

Do not input signals using transistor output equipment of a voltage/current output type. Otherwise, the internal circuit may be damaged.

Minimum Power Application Time

If the power application time to the GT3F is shorter than the minimum power application time, the output relay may not operate or the timer may operate faster than the preset time.

Time Accuracy

Repeat Error

This indicates variance of operation time when operation is repeated under the same conditions. The variance is calculated from the following formula and the measurements should be done 5 times at least.

$$= \pm \frac{1}{2} \quad \frac{\text{Max. measured value} - \text{Min. measured value}}{\text{Maximum scale value}} \quad 100\ (\%)$$

Voltage Error

This indicates the variance of operation time when the voltage at operation current varies within allowable voltage variance.

$$= \pm \frac{Tv - Tr}{Tr} \quad 100\ (\%)$$

Tv: Average of measured operation time values at voltage V

Tr: Average of measured operation time values at the raged voltage

Temperature Error
This indicates the influence caused by the change in temperature during operation within operating temperature. This is shown with the variance of operation time.

$$= \pm \frac{Tt - T_{20}}{T_{20}} \times 100\ (\%)$$

Tt: Average of operation times at temperature t
T_{20}: Average of operation times at reference temperature (20ºC)

Setting Error
This indicates the gap between actual operation time and that on scale. Calculated from below formula, this is measured at any point but more than one-third of the maximum scale value.

$$= \pm \frac{\text{Average of measured values} - \text{Set value}}{\text{Maximum scale value}} \times 100\ (\%)$$

Load Current
The rated current of the contact (or control output) should not be exceeded. Especially for inductive, capacitive, and incandescent lamp loads, the inrush current as large as a few to several tens times the rated current may cause welded contacts and other troubles. The amount of inrush current as well as steady-state current must be taken into consideration.

Contact Protection
Switching an inductive load generates a counter-electromotive force in the coil. The counter emf will cause arcing, which may shorten the contact life. Application of a protection circuit is recommended for contact protection.

Rest Time
When turning power off after time-out or during operation, allow a rest time longer than the reset time to restart. (Each model has a different reset time.)

Continuous Energizing
Continuous energizing for a long period of time may damage the electrical characteristics of the timer because of internal heating. Use an additional relay to the output circuit and refrain from continuous energizing of the timer.

Dielectric Strength Test
When performing an insulation resistance or dielectric-strength test on control panels containing timers, make sure that the dielectric strength of the timer is not exceeded. In case the dielectric strength is exceeded, remove the timers from the panels.

Operating Environment
Temperature and Humidity
Use the timer within the operating temperature and operating humidity ranges and prevent freezing and condensation. After storing below the operation temperature, leave the timer at room temperature for a sufficient period of time before use.

Environment
Prevent a corrosive gas such as sulfurous or ammonia gas, organic solvents (alcohol, benzine, thinner, etc.), strong alkaline substances or strong acids from touching to the timer, and do not use the timer in such an environment. Keep the timer from water splashes or steam.

Vibration and Shock
Since excessive vibrations or shocks cause the output contacts to open, the timer should be used within the operating extremes of vibration and shock resistance. Use of hold-down springs is recommended for secure mounting on sockets.

Noise and Static Charge
Check the operation of the timer before using in an environment with a lot of noise. Install the input signal source, input signal wiring and timer away from noise source and high-voltage wire with noise as much as possible. Also, in case of using the timer under the environment with multiple static charge (pipe transportation of molding material, power/liquid material, etc.), place the timer away from such static charge source as well.

Others
The GT3F does not read the preset values of each selector after power is turned off. Note that minimizing the preset time does not shorten the delay time after power is turned off.
To make a sequence circuit by connecting timers and relays, check the timer operation sufficiently in consideration of the reset time of the timer.