




GT5P Series Miniature Electronic Timers

Economic Efficiency Focused Delayed Output SPDT/5A

- Three operation modes: ON Delay, Cycle, and One Shot
- Repeat error: $\pm 0.2\%$ ± 10 ms maximum
- Complies with safety standards
UL recognized, CSA certified, TÜV approved, EN compliant

Applicable Standards	Mark	File No. or Organization
UL508		UL/c-UL recognized File No. E55996
CSA C22.2 No.14		CSA File No. LR66809
EN61812-1		EU Low Voltage Directive



Package Quantity: 1

Operation Mode	Contact	Output	Time Range	Operating Voltage	Part No. (Ordering No.)			
ON Delay	SPDT	24V DC/ 120V AC, 5A 240V AC, 3A	3S	100 to 120V AC	GT5P-N3SA100			
			10S		GT5P-N10SA100			
			30S		GT5P-N30SA100			
			60S		GT5P-N60SA100			
			3M		GT5P-N3MA100			
			6M		GT5P-N6MA100			
			10M		GT5P-N10MA100			
			1S		200 to 240V AC	GT5P-N1SA200		
			6S			GT5P-N6SA200		
			10S			GT5P-N10SA200		
			30S	GT5P-N30SA200				
			60S	GT5P-N60SA200				
			3M	GT5P-N3MA200				
			6M	GT5P-N6MA200				
			10M	GT5P-N10MA200				
			1S	24V AC/DC		GT5P-N1SAD24		
			6S			GT5P-N6SAD24		
			10S		GT5P-N10SAD24			
			60S		GT5P-N60SAD24			
			6M		GT5P-N6MAD24			
			10M		GT5P-N10MAD24			
			10S		12V DC	GT5P-N10SD12		
			30S			GT5P-N30SD12		
			60S			GT5P-N60SD12		
10M	GT5P-N10MD12							
3S	100 to 120V AC	GT5P-F3SA100						
10S		GT5P-F10SA100						
Cycle	SPDT	24V DC/ 120V AC, 5A 240V AC, 3A	3S	200 to 240V AC	GT5P-F3SA200			
			10S		GT5P-F10SA200			
			3S	24V AC/DC	GT5P-F3SAD24			
			10S		GT5P-F10SAD24			
			3S	12V DC	GT5P-F3SD12			
			10S		GT5P-F10SD12			
			One Shot	SPDT	24V DC/ 120V AC, 5A 240V AC, 3A	3S	100 to 120V AC	GT5P-P3SA100
						3S		GT5P-P3SA200
10S	200 to 240V AC	GT5P-P10SA200						
3S		GT5P-P3SAD24						
10S	24V AC/DC	GT5P-P10SAD24						

Note: S and M of time range indicate second and minute respectively.

Time Ranges

Code	Time Range
1S	0.1 sec to 1 sec
3S	0.1 sec to 3 sec
6S	0.1 sec to 6 sec
10S	0.2 sec to 10 sec
30S	0.5 sec to 30 sec
60S	1 sec to 60 sec
3M	3 sec to 3 min
6M	6 sec to 6 min
10M	10 sec to 10 min

Contact Ratings

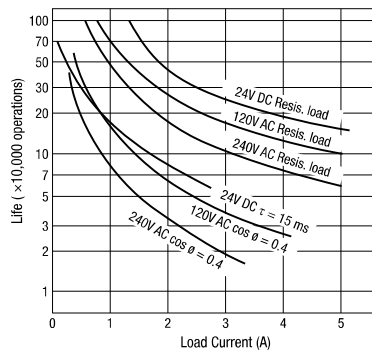
Contact Configuration		SPDT
Maximum Switching Voltage		250V AC, 150V DC
Maximum Switching Current		5A
Maximum Switching Power		AC: 960VA DC: 120W
Rated Load	Resistive Load	120V AC / 24V DC, 5A 240V AC, 3A
	Inductive Load $\cos\phi = 0.4$ L/R = 15 ms	240V AC, 0.8A 120V AC, 1.4A 24V DC, 1.7A
Life	Electrical	100,000 operations minimum (rated resistive load)
	Mechanical	20,000,000 operations minimum

Minimum Applicable Load: 5V DC 10 mA (reference value)

General Specifications

Model	GT5P-N	GT5P-F	GT5P-P
Operation	ON Delay	Cycle	One Shot
Pollution Degree	2 (IEC60664-1)		
Rated Operational Voltage	A200	200 to 240V AC (50/60Hz)	
	A100	100 to 120V AC (50/60Hz)	
	AD24	24V AC (50Hz/60Hz)/24V DC	
	D12	12V DC	
Voltage Range	A200	170 to 264V AC (50/60Hz)	
	A100	85 to 132V AC (50/60Hz)	
	AD24	20.4 to 26.4V AC (50/60Hz)/21.6 to 26.4V DC	
	D12	10.8 to 13.2V DC	
Operating Temperature	-10 to +50°C (no freezing)		
Storage Temperature	-30 to +70°C (no freezing)		
Operating Humidity	35 to 85% RH (no condensation)		
Storage Humidity	30 to 85% RH (no condensation)		
Altitude	0 to 2000m (operation), 0 to 3000m (transportation)		
Reset Time	100 ms maximum		
Repeat Error	±0.2%, ±10 ms		
Voltage Error	±0.5%, ±20 ms		
Temperature Error	±3%		
Setting Error	±10%		
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	Operating extremes: 10 to 55Hz, amplitude 0.75 mm, 10 minutes each in 3 directions		
	Damage limits: 10 to 55Hz, amplitude 0.75 mm, 2 hours each in 3 directions		
Shock Resistance	Operating extremes: 98 m/s ² , 10 minutes each in 3 directions		
	Damage limits: 490 m/s ² , 2 hours each in 3 directions		
Power Consumption (approx.)	A200	5.0 VA (60Hz)	5.0 VA (60Hz)
	A100	2.9 VA (60Hz)	2.9 VA (60Hz)
	AD24	1.4 VA (60Hz)/0.5W	1.4 VA (60Hz)/0.5W
	D12	0.6W	0.6W
Dimensions	36H × 29W × 81.5D mm		
Weight (approx.)	54g		

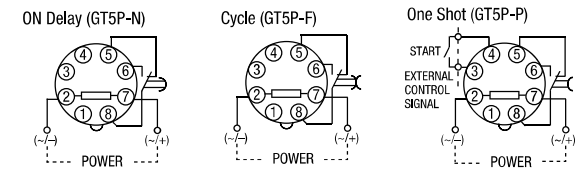
Electrical Life Curves



Operation Charts and Internal Connections

Operation Mode	Item	Operation
On Delay	Terminal No. 2-7 (POWER)	[Timing diagram showing power pulse with 'Set Time' interval]
	5-8 (NC)	[Timing diagram showing normally closed contact state]
	6-8 (NO)	[Timing diagram showing normally open contact state]
	POWER Indicator	[Timing diagram showing indicator pulse]
	OUT Indicator	[Timing diagram showing output pulse]
Cycle	Terminal No. 2-7 (POWER)	[Timing diagram showing power pulses with 'Set Time' and 'T' intervals]
	5-8 (NC)	[Timing diagram showing normally closed contact state]
	6-8 (NO)	[Timing diagram showing normally open contact state]
	POWER Indicator	[Timing diagram showing indicator pulses]
	OUT Indicator	[Timing diagram showing output pulses]
One Shot	Terminal No. 13-14 (POWER)	[Timing diagram showing power pulse]
	3-4 (Start Input)	[Timing diagram showing start input pulse with '50ms minimum' interval]
	5-8 (NC)	[Timing diagram showing normally closed contact state]
	6-8 (NO)	[Timing diagram showing normally open contact state]
	POWER Indicator	[Timing diagram showing indicator pulse]

(Internal Connections)



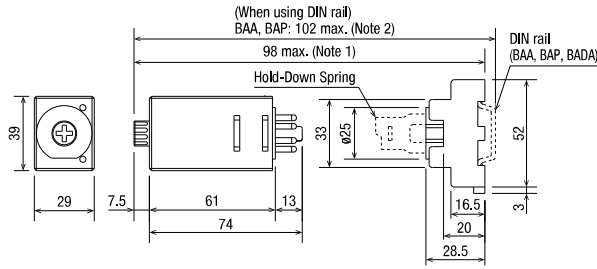
Dimensions

All dimensions in mm.

(When using DIN Rail Mount Socket)

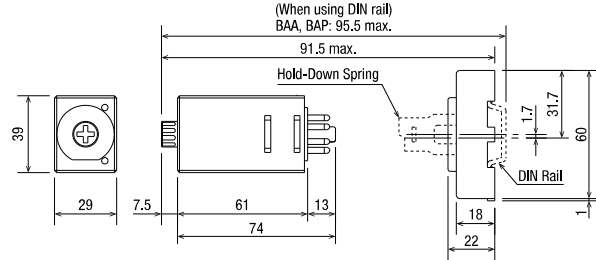
SR2P-05B

For SR2P-05C, see Relay Sockets catalog.



Note 1: SR2P-05C: 99.5 max.
 Note 2: SR2P-05C: 103.5 max.

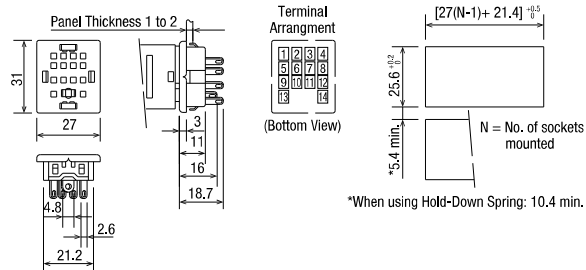
SR2P-06B



Mounting Hole Layout (for Panel/PC Board Mount Socket)

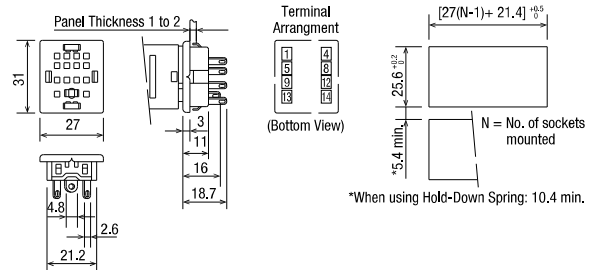
1. GT5Y-4

Panel Mount Socket (SY4S-51)

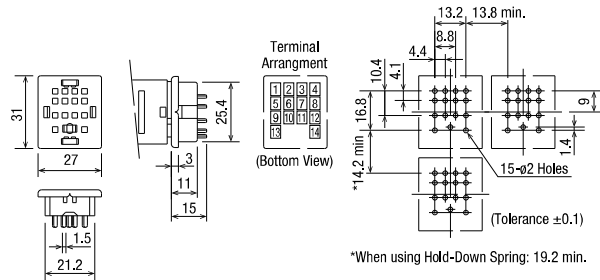


2. GT5Y-2

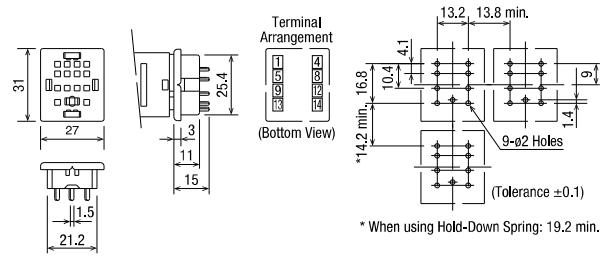
Panel Mount Socket (SM2S-51)



PC Board Mount Socket (SY4S-61)

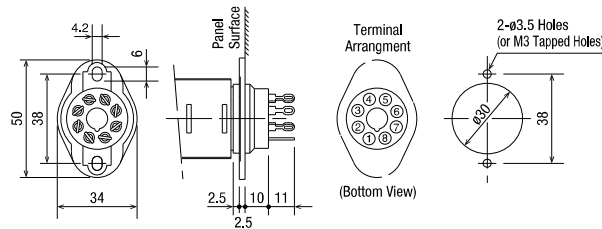


PC Board Mount Socket (SM2S-61)

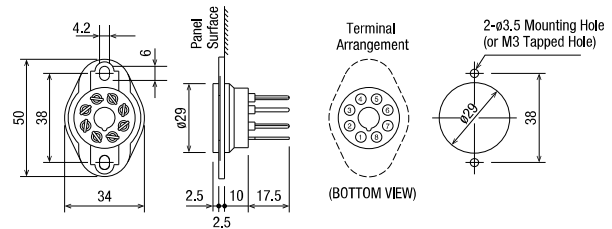


3. GT5P

Solder Terminal (SR2P-511)



Wire Wrap Terminal (SR2P-70)

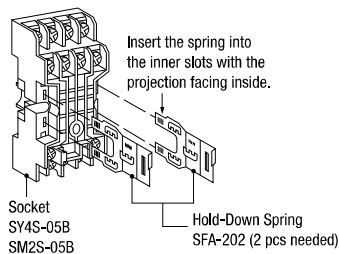


Accessories

Item	Part No.	Ordering No.	Package Quantity	Remarks	
DIN Rail Mount Socket	Socket	SR2P-06B	SR2P-06B	1	
		SR2P-05B	SR2P-05B	1	
		SR2P-05C	SR2P-05C	1	UL/CSA/TÜV
	Hold-Down Spring	SFA-202	SFA-202PN20	10 sets (20 pcs)	For SR2P-06A (2 pcs/set)
		SFA-203	SFA-203PN20	10 sets (20 pcs)	For SR2P-05A (2 pcs/set)
Panel Mount Socket	w/Solder Terminals	SR2P-511	SR2P-511	1	UL/CSA
	w/Wire Wrap Terminals	SR2P-70	SR2P-70	1	

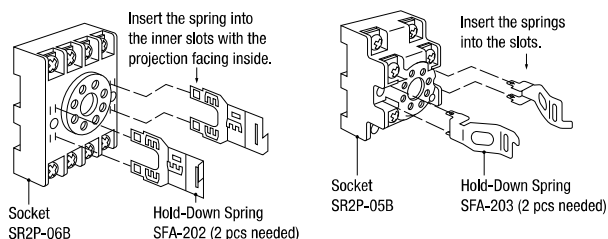
Installation of Hold-Down Springs

DIN Rail Mount Socket



Recommended Tightening Torque and Terminal Screw

Timer	Applicable Socket	Terminal Screw	Recommended Tightening Torque
GT5Y	SY4S-05 SM2S-05	M3	0.6 to 1.0 N·m



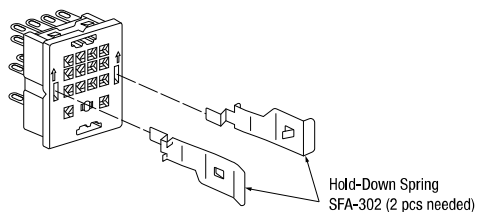
Note 1: Once installed into sockets, the hold-down springs cannot be removed.
 Note 2: Hold-down springs cannot be used on SR2P-511 for GT5P.

Recommended Tightening Torque and Terminal Screw

Timer	Applicable Socket	Terminal Screw	Recommended Tightening Torque
GT5P	SR2P-05 SR2P-06	M3.5	1.0 to 1.3 N·m

Panel/PC Board Mount Socket

The SFA-302 Hold-Down Springs can be installed to the SY4S-51, SY4S-61, SM2S-51, and SM2S-61 sockets.

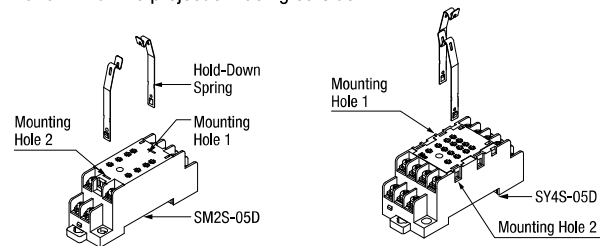


Hold-down springs cannot be installed to SR2P-511 and SR2P-70 panel mount sockets.

Installation/Removal of Hold-Down Springs

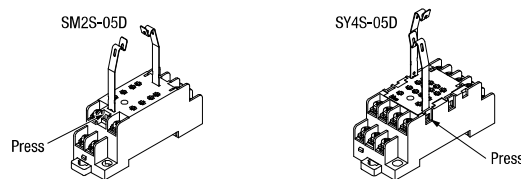
(Installation)

Insert the hold-down springs (SFA-511) into mounting holes 1 and 2 with the projection facing outside.



(Removal)

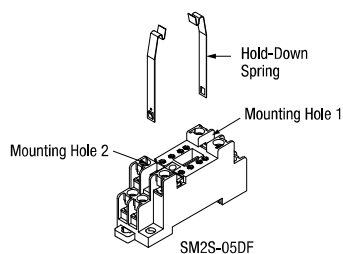
Press the projections of Hold-Down Springs (SFA-511) in the direction shown in the arrow and pull upward to remove.



Installation/Removal of Hold-Down Springs

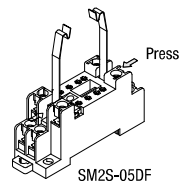
(Installation)

Insert the springs (SFA-511) into mounting holes 1 and 2 with the projection facing outside.



(Removal)

Press the projections of Hold-Down Springs (SFA-511) in the direction shown in the arrow and pull upward to remove.



Note: Apply the same method to SY4S-05DF.

Safety Precautions

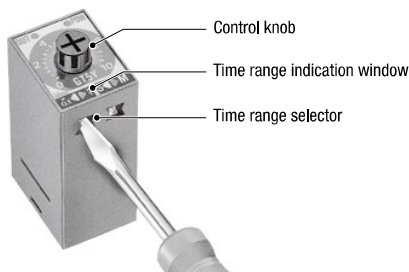
- Be sure to turn off power before mounting, removal, wiring, maintenance and inspection. Otherwise, electric shock or fire could occur.
- Be sure to use wires to meet voltage and current requirements and tighten M3.5 terminal screws to a tightening torque of 1.0 to 1.3 N·m. Be sure to solder the terminals correctly. Loose terminal screws or incomplete soldering may cause abnormal heat and fire.

Instructions

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 control knob by measuring the operating time with a watch before application.

On the GT5Y timers, a desired time range can be selected using the time range selectors on the side surface. Turn the multiplier and time unit selectors using a flat screwdriver until they click.



Timing Accuracy

Timing accuracies are calculated from the following formulas:

Repeat Error

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

Voltage Error

$$= \pm \frac{T_v - T_r}{T_r} \times 100 (\%)$$

T_v : Average of measured values at voltage V
 T_r : Average of measured values at the rated voltage

Temperature Error

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

T_t : Average of measured values at $t^\circ\text{C}$
 T_{20} : Average of measured values at 20°C

Setting Error

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

Use of External Input (GT5P-P Only)

1. Do not apply voltage to external input terminals 3 and 4. Be sure not to connect external inputs to other terminals because the internal circuit may be damaged.
2. Use reliable mechanical contacts capable of switching approximately 22V DC, 1 mA to close input terminals 3 and 4. (Closed: 1 k Ω maximum, Open: 100 k Ω minimum) The input terminals should not be connected to a ground wire of other devices.
3. Do not install input lines in parallel with high-voltage or motor lines. Use shielded wires or separate conduit for input lines, and make the input lines as short as possible.

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, allow a rest time of 0.1 sec, and during operation, 1 sec at least.

Power

Since DC types are designed to operate on DC power containing 10% or less ripple, insert a smoothing circuit when using a rectified AC power to operate DC type timers.

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, benzene, 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.

Others

- Use a mechanical-contact switch or relay to supply power to the time.
- When driving the timer using a solid-state output device such as two-wire proximity switch, photoelectric switch or solid-state relay directly, malfunction may be caused by a leakage current from the solid-state device. Be sure to check thoroughly before using.
- Since AC types (such as A100 and A200) 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.
- To make a sequence circuit by connecting timer and relay, check the timer operation sufficiently in consideration of the reset time of the timer.