



GT5Y Series Miniature Electronic Timers

Four Selectable Operation Modes. Six Selectable Time Ranges. Delayed Output 4PDT/3A or DPDT/5A.

- Four operation modes: ON Delay, Interval ON, Cycle OFF, and Cycle ON
- Repeat error: $\pm 0.2\% \pm 20$ ms maximum
- Miniature size
- LED indicators for output and power
- Complies with safety standards. UL/c-UL listed. EN compliant.

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

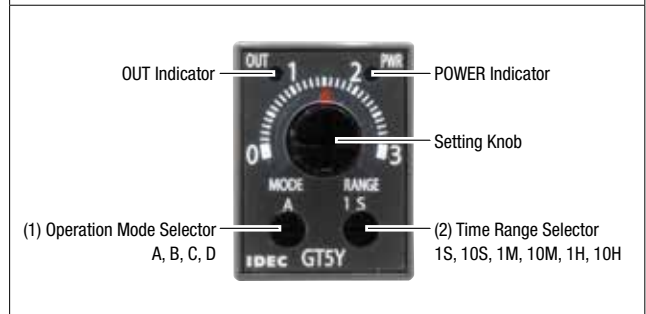
Note: When using as a UL Listing approved product, use IDEC timer sockets under the below conditions.

SY4S-05*, SM2S-05* (Specify A, B, C, DF, DN, or U in place of *)

- Wire conductor temperature rating: 60°C min.
- Copper wire only: AWG14 max. (2mm² max.), AWG14 max. (0.9mm² max.)
- Tightening torque: 0.6 to 1.0N·m

SU4S-11L, SU2S-11L

- Wire conductor temperature rating: 60°C min.
- Copper wire only: AWG16 max. (solid wire 1.5mm² max., stranded wire 1.25mm² max.), AWG18 max. (0.9mm² max.)



Package Quantity: 1

(1) Operation Mode	Contact	Output	Time Ranges	Operating Voltage	Part No. (Ordering No.)			
A: ON Delay	DPDT	220V AC/ 30V DC, 5A	0.1S to 10H	100 to 120V AC	GT5Y-2SN1A100			
			0.1S to 30H		GT5Y-2SN3A100			
			0.1S to 60H		GT5Y-2SN6A100			
			B: Interval ON	DPDT	220V AC/ 30V DC, 5A	0.1S to 10H	200 to 240V AC	GT5Y-2SN1A200
						0.1S to 30H		GT5Y-2SN3A200
						0.1S to 60H		GT5Y-2SN6D12
C: Cycle OFF	DPDT	220V AC/ 30V DC, 5A				0.1S to 10H	12V DC	GT5Y-2SN1D12
						0.1S to 30H		GT5Y-2SN3D12
						0.1S to 60H		GT5Y-2SN6D12
			D: Cycle ON	4PDT	30V DC, 3A	0.1S to 10H	24V DC	GT5Y-2SN1D24
						0.1S to 30H		GT5Y-2SN3D24
						0.1S to 60H		GT5Y-2SN6D24
A: ON Delay	4PDT	30V DC, 3A				0.1S to 10H	100 to 120V AC	GT5Y-4SN1A100
						0.1S to 30H		GT5Y-4SN3A100
						0.1S to 60H		GT5Y-4SN6A100
			B: Interval ON	4PDT	30V DC, 3A	0.1S to 10H	200 to 240V AC	GT5Y-4SN1A200
						0.1S to 30H		GT5Y-4SN3A200
						0.1S to 60H		GT5Y-4SN6A200
C: Cycle OFF	4PDT	30V DC, 3A				0.1S to 10H	12V DC	GT5Y-4SN1D12
						0.1S to 30H		GT5Y-4SN3D12
						0.1S to 60H		GT5Y-4SN6D12
			D: Cycle ON	4PDT	30V DC, 3A	0.1S to 10H	24V DC	GT5Y-4SN1D24
						0.1S to 30H		GT5Y-4SN3D24
						0.1S to 60H		GT5Y-4SN6D24

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

Time Ranges

Code	Scale	(2) Time Range Indication	Time Range
1: 0.1S to 10H	0 to 1	1S	0.1 sec to 1 sec
		10S	0.2 sec to 10 sec
		1M	1 sec to 1 min
		10M	10 sec to 10 min
		1H	1 min to 1 hr
		10H	10 min to 10 hr
3: 0.1S to 30H	0 to 3	1S	0.1 sec to 3 sec
		10S	0.5 sec to 30 sec
		1M	3 sec to 3 min
		10M	30 sec to 30 min
		1H	3 min to 3 hr
		10H	30 min to 30 hr
6: 0.1S to 60H	0 to 6	1S	0.1 sec to 6 sec
		10S	1 sec to 60 sec
		1M	6 sec to 6 min
		10M	1 min to 60 min
		1H	6 min to 6 hr
		10H	60 min to 60 hr

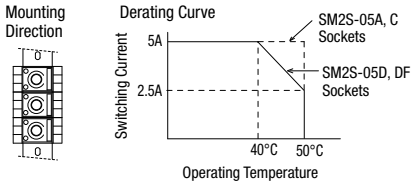
Contact Ratings

Part No.	GT5Y-4	GT5Y-2
Contact Configuration	4PDT	DPDT
Rated Load	Resistive Load Inductive Load $\cos\theta=0.3, L/R=7\text{ms}$	Resistive Load Inductive Load $\cos\theta=0.3, L/R=7\text{ms}$
Maximum Switching Voltage	220V AC, 3A/30V DC, 3A	220V AC, 5A/30V DC, 5A
Maximum Switching Current	220V AC, 0.8A/30V DC, 1.5A	220V AC, 2A/30V DC, 2.5A
Maximum Switching Frequency	250V AC/125V DC	250V AC/125V DC
Allowable Contact Power	3A	5A (Note)
Minimum Applicable Load	1800 operations/hour	1800 operations/hour
External Protection Element	Resistive Load Inductive Load $\cos\theta=0.3, L/R=7\text{ms}$	Resistive Load Inductive Load $\cos\theta=0.3, L/R=7\text{ms}$
Life	AC: 660VA/DC: 90W	AC: 1100VA/DC: 150W
	AC: 176VA/DC: 45W	AC: 440VA/DC: 75W
	5V DC, 10mA (reference value)	5V DC, 20mA (reference value)
	24V DC, 5mA (reference value)	24V DC, 10mA (reference value)
	Fuse 250V 3A	Fuse 250V 5A
	Electrical	Electrical
	200,000 operations minimum (220V AC, 3A)	500,000 operations minimum (220V AC, 5A)
	Mechanical	Mechanical
	50 million operations minimum	50 million operations minimum

Note: See Operating Temperature - Maximum Switching Current Characteristics.

Operating Temperature - Maximum Switching Current Characteristics

Check the derating curve described below when mounting more than two GT5Y-2 timers and SM2S-05* sockets.

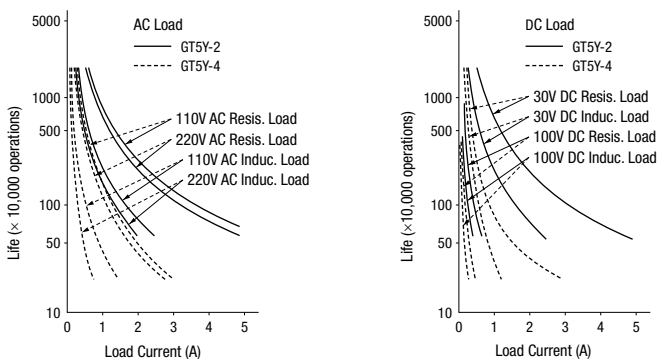


General Specifications

Model	GT5Y-□SN	
Operation	ON Delay / Interval ON / Cycle OFF / Cycle ON	
Pollution Degree	2 (IEC60664-1)	
Overvoltage Category	III (IEC60664-1)	
Rated Operational Voltage	A200	200 to 240V AC (50/60Hz)
	A100	100 to 120V AC (50/60Hz)
	D24	24V DC
	D12	12V DC
Voltage Range	A200	170 to 264V AC (50/60Hz)
	A100	85 to 132V AC (50/60Hz)
	D24	21.6 to 26.4V DC
	D12	10.8 to 13.2V DC
Reset Voltage	Rated Voltage × 20% minimum	
Operating Temperature	-10 to +50°C (no freezing and condensation)	
Storage/Transportation Temperature	-30 to +80°C (no freezing and condensation)	
Operating Humidity	35 to 85% RH (no condensation)	
Storage Humidity	35 to 85% RH (no condensation)	
Altitude	0 to 2000m (operation), 0 to 3000m (transportation)	
Reset Time	100 ms maximum	
Repeat Error	Within ±0.2%, ±20 ms	
Voltage Error	Within ±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: 1000V AC, 1 minute	
Vibration Resistance	Operating extremes: 10 to 55 Hz, amplitude 0.5 mm, 10 minutes each in 3 directions Damage limits: 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.)	A200	1.2 VA (200V AC/60Hz), 1.2 VA (200V AC/50Hz)
	A100	1.1 VA (100V AC/60Hz), 1.2 VA (100V AC/50Hz)
	D24	1.0W
	D12	0.9W
Dimensions	27.7H × 21.0W × 58.3D mm	
Weight (approx.)	42g	

Note: See Operating Temperature – Maximum Switching Current Characteristics.

Electrical Life Curves



Operation Charts and Internal Connections

Operation Mode	Item	Operation
A: ON Delay	Terminal No.	13-14 (POWER)
	Terminal No.	1-9, 2-10, 3-11, 4-12 (NC)
	Terminal No.	5-9, 6-10, 7-11, 8-12 (NO)
	POWER Indicator	
	OUT Indicator	
	Terminal No.	13-14 (POWER)
B: Interval ON	Terminal No.	13-14 (POWER)
	Terminal No.	1-9, 2-10, 3-11, 4-12 (NC)
	Terminal No.	5-9, 6-10, 7-11, 8-12 (NO)
	POWER Indicator	
	OUT Indicator	
	Terminal No.	13-14 (POWER)
C: Cycle OFF	Terminal No.	13-14 (POWER)
	Terminal No.	1-9, 2-10, 3-11, 4-12 (NC)
	Terminal No.	5-9, 6-10, 7-11, 8-12 (NO)
	POWER Indicator	
	OUT Indicator	
	Terminal No.	13-14 (POWER)
D: Cycle ON	Terminal No.	13-14 (POWER)
	Terminal No.	1-9, 2-10, 3-11, 4-12 (NC)
	Terminal No.	5-9, 6-10, 7-11, 8-12 (NO)
	POWER Indicator	
	OUT Indicator	
	Terminal No.	13-14 (POWER)

(Internal Connections)

- GT5Y-4: 5 1 6 2 7 3 8 4 14 (~)/(+) 9 10 11 12 13 (~)/(-)
- GT5Y-2: 5 1 8 4 14 (~)/(+) 9 12 13 (~)/(-)

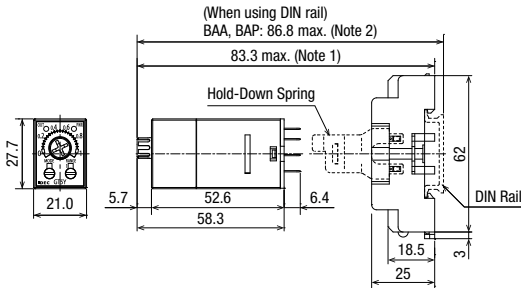
Dimensions

All dimensions in mm.

(When using DIN Rail Mount Socket)

GT5Y-4

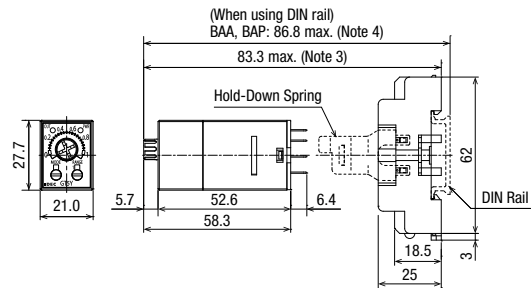
See Relay Sockets catalog for SY4S-05B, SY4S-05C, SY4S-05D, SY4S-05DF.



Note 1: SY4S-05B: 83.3 max., SY4S-05C: 83.3 max., SY4S-05D: 88.3 max., SY4S-05DF: 88.3 max.
 Note 2: SY4S-05B: 86.8 max., SY4S-05C: 86.8 max., SY4S-05D: 91.8 max., SY4S-05DF: 91.8 max.

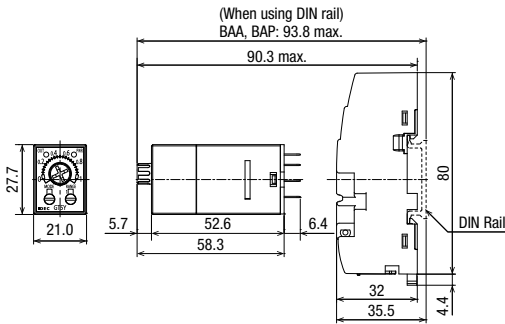
GT5Y-2

See Relay Sockets catalog for SM2S-05B, SM2S-05C, SM2S-05D, SM2S-05DF.



Note 3: SM2S-05B: 83.3 max., SM2S-05C: 83.3 max., SM2S-05D: 88.3 max., SM2S-05DF: 88.3 max.
 Note 4: SM2S-05B: 86.8 max., SM2S-05C: 86.8 max., SM2S-05D: 91.8 max., SM2S-05DF: 91.8 max.

GT5Y-4 and SU4S-11L, GT5Y-2 and SU2S-11L



Applicable hold-down spring: SFA-202

Accessories

Accessories

Both SY4S-05B, SY4S-05C, SY2S-05B, SM2S-05B, and SM2S-05C are UL recognized, CSA certified, and TÜV approved. Others are UL recognized and CSA certified, except for SY4S-05A and SM2S-05A.
 When ordering, specify the Ordering No.

Item	Part No.	Ordering No.	Package Quantity	Remarks	
DIN Rail Mount Socket	Socket	SY4S-05B	SY4S-05A	1	For 4PDT contact (Screw)
	Socket	SY4S-05C	SY4S-05C	1	For 4PDT contact (Screw)
	Socket	SY4S-05DF	SY4S-05DF	1	For 4PDT contact (Screw)
	Socket	SU2S-21L	SU2S-21L	1	For DPDT contact (Push-in)
	Socket	SU4S-21L	SU4S-21L	1	For 4PDT contact (Push-in)
	Socket	SM2S-05B	SM2S-05A	1	For DPDT contact (Screw)
	Socket	SM2S-05C	SM2S-05C	1	For DPDT contact (Screw)
DIN Rail Mount Socket	Hold-Down Spring	SM2S-05DF	SM2S-05DF	1	For DPDT contact (Screw)
	Hold-Down Spring	SFA-202	SFA-202PN20	10 sets (20 pcs)	For SY4S-05A, SM2S-05A (2 pcs/set)
	Hold-Down Spring	SFA-511	SFA-511PN20	20	For SY4S-05D, SY4S-05DF, SM2S-05D, SM2S-05DF
Panel/PC Board Mount Socket	Hold-Down Spring	SU9Z-S21T	SU9Z-S21T	10	For SU2S-21L, SU4S-21L
	Socket	SY4S-51	SY4S-51	1	For 4DPT contact, Solder Terminal
	Socket	SY4S-61	SY4S-61	1	For 4DPT contact, PC Board Terminal
	Socket	SM2S-51	SM2S-51	1	For DPDT contact, Solder Terminal
Panel/PC Board Mount Socket	Socket	SM2S-61	SM2S-61	1	For DPDT contact, PC Board Terminal
	Hold-Down Spring	SFA-302	SFA-302PN20	10 sets (20 pcs)	For SY4S-51, SY4S-61, SM2S-51, SM2S-61 (2 pcs/set)

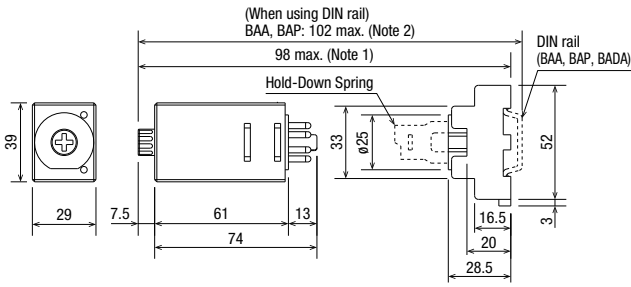
Dimensions

All dimensions in mm.

(When using DIN Rail Mount Socket)

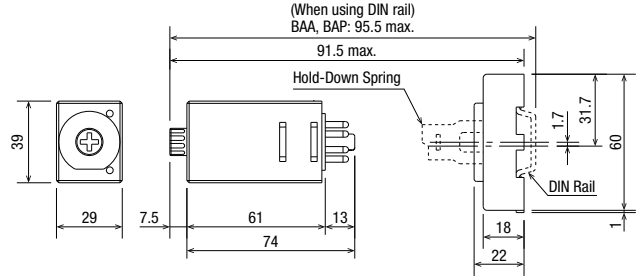
SR2P-05B

For SR2P-05C, see Relay Sockets catalog.



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

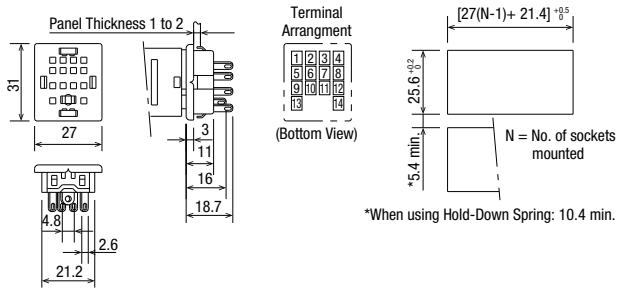
SR2P-06B



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

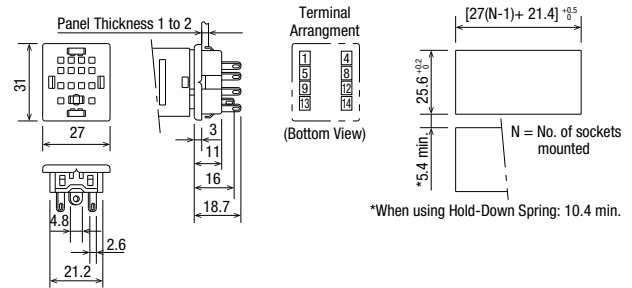
1. GT5Y-4

Panel Mount Socket (SY4S-51)

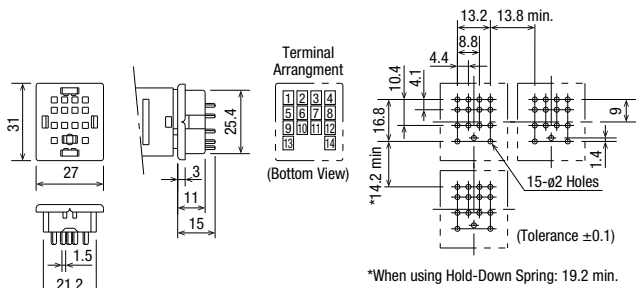


2. GT5Y-2

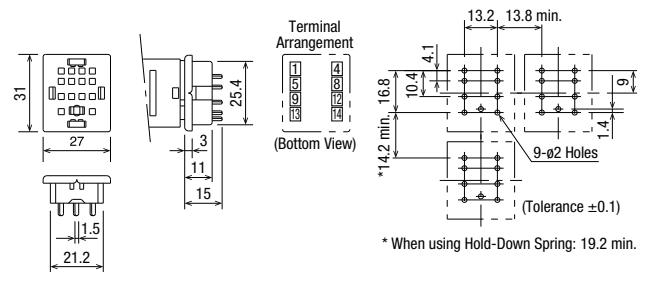
Panel Mount Socket (SM2S-51)



PC Board Mount Socket (SY4S-61)

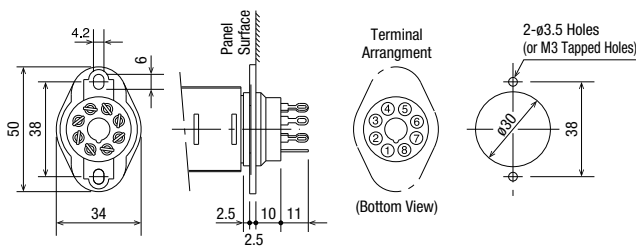


PC Board Mount Socket (SM2S-61)

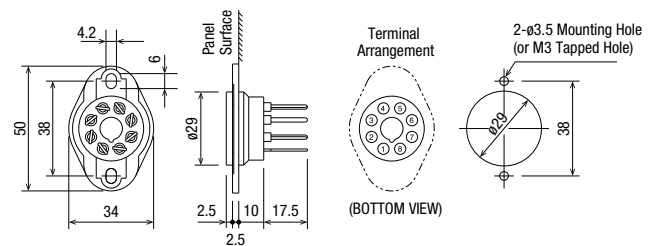


3. GT5P

Solder Terminal (SR2P-511)



Wire Wrap Terminal (SR2P-70)

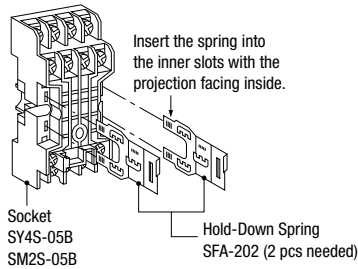


Accessories

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	

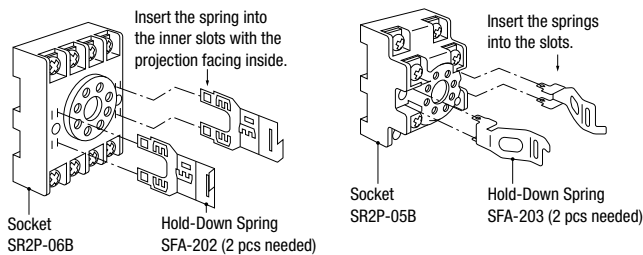
Installation of Hold-Down Springs

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



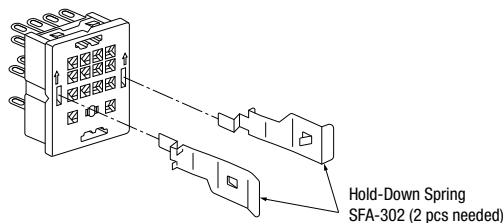
Note 1: Once installed into sockets, the hold-down springs cannot be removed.
Note 2: Hold-down springs cannot be used on SR2P-511 for GT5P.

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.

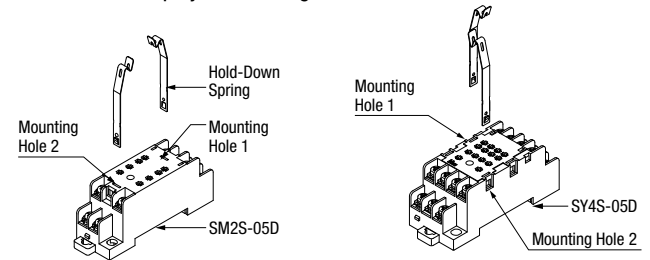


Hold-down springs cannot be installed to SR2P-511 and SR2P-70 panel mount sockets.

Installation/Removal of Hold-Down Springs

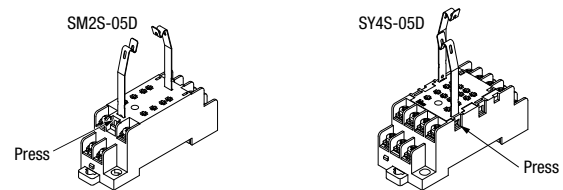
(Installation)

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



(Removal)

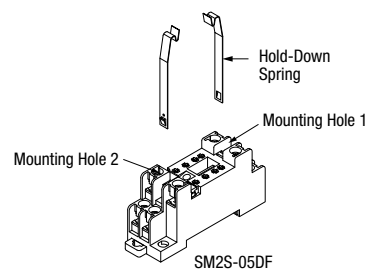
Press the projections of Hold-Down Springs (SFA-511) in the direction shown in the arrow and pull upward to remove.



Installation/Removal of Hold-Down Springs

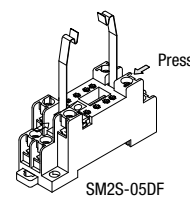
(Installation)

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

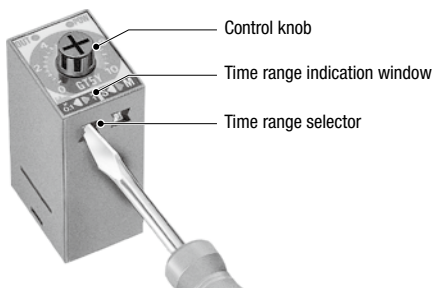
- Be sure to turn off power before mounting, removal, wiring, maintenance and inspection. Otherwise, electric shock or fire could occur.
- Be sure to use timers within rated specification values. Otherwise, electric shock or fire may occur.
- Be sure to use wires to meet voltage and current requirements and tighten M3.5 terminal screws to a 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, 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.

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.