

A High-capacity, High-dielectric-strength Relay Compatible with Momentary Voltage Drops

- No contact chattering for momentary voltage drops up to 50% of rated voltage.
- Wide-range AC-activated coil that handles 100 to 120 or 200 to 240 VAC at either 50 or 60 Hz.
- Miniature size for maximum switching power, particularly for inductive loads.
- Flame-resistance materials (UL94V-0-qualifying) used for all insulation material.
- Quick-connect, screw, and PCB terminals, and DIN track mounting available.
- Conforms to UL, CSA, TUV and meets IEC950.
- Safety design with contact gap of 3 mm.

RoHS Compliant

Model Number Legend




G7L-□□-□□□
1 2 3 4 5

- | | | |
|--|---|--|
| 1. Number of Poles
1: 1 pole
2: 2 poles

2. Contact Form
A: □PST-NO | 3. Terminal Shape
T: Quick connect terminals (#250)
B: Screw terminals
P: PCB terminals | 4. Mounting Construction
Blank: E-bracket
UB : Upper bracket

5. Special Functions
J : With test button |
|--|---|--|

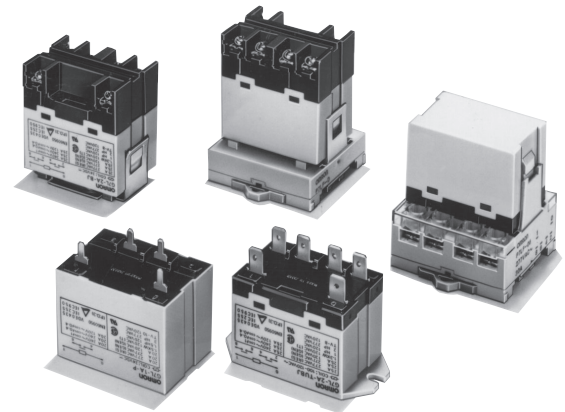
Model Configuration

Terminal			Quick-connect terminals	Screw terminals	PCB terminals
					
Classification		Contact form			
E-bracket mounting (E-bracket is sold separately)	—	SPST-NO	G7L-1A-T	G7L-1A-B	—
		DPST-NO	G7L-2A-T	G7L-2A-B	—
	With test button	SPST-NO	G7L-1A-TJ	G7L-1A-BJ	—
		DPST-NO	G7L-2A-TJ	G7L-2A-BJ	—
Upper bracket mounting	—	SPST-NO	G7L-1A-TUB	G7L-1A-BUB	—
		DPST-NO	G7L-2A-TUB	G7L-2A-BUB	—
	With test button	SPST-NO	G7L-1A-TUBJ	G7L-1A-BUBJ	—
		DPST-NO	G7L-2A-TUBJ	G7L-2A-BUBJ	—
PCB mounting	—	SPST-NO	—	—	G7L-1A-P
		DPST-NO	—	—	G7L-2A-P

List of E-bracket Mounting Models

Mounting				E-brackets	DIN Track Mounting Adapter	Front-connecting Socket
Terminal	Contact form	Model	Test button			
Quick-connect terminals	SPST-NO	G7L-1A-T	—	○	○	○
		G7L-1A-TJ	With test button	○	○	○
	DPST-NO	G7L-2A-T	—	○	○	○
		G7L-2A-TJ	With test button	○	○	○
Screw terminals	SPST-NO	G7L-1A-B	—	○	○	—
		G7L-1A-BJ	With test button	○	○	—
	DPST-NO	G7L-2A-B	—	○	○	—
		G7L-2A-BJ	With test button	○	○	—

Note. Accessories: E-bracket (R99-07), Adapter (P7LF-D), Front-connecting socket (P7LF-06) and Cover (P7LF-C) sold separately.



Note. Accessories: E-bracket, Adapter, Front-connecting socket and Cover sold separately.

Application Examples

- Compressors for air conditioners and heater switching controllers.
- Switching controllers for power tools or motors.
- Power controllers for water heaters.
- Power controllers for dryers.
- Lamp controls, motor drivers, and power supply switching in copy machines, facsimile machines, and other office equipment.
- Lighting controllers.
- Power controllers for packers or food processing equipment.
- Magnetron control in microwaves.
- Power controllers for Uninterruptible Power Supply (UPS)

■ Ordering Information

E-bracket/Adapter/Socket Mounting Quick-connect Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-T	AC: 12, 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-T	AC: 12, 24, 50, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

Upper Bracket Mounting Quick-connect Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-TUB	AC: 12, 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-TUB	AC: 12, 24, 50, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

E-bracket/Adapter Mounting Screw Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-B	AC: 12, 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-B	AC: 12, 24, 100/120, 200/240 DC: 12, 24, 48, 100	

Upper Bracket Mounting Screw Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-BUB	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-BUB	AC: 12, 24, 50, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

PCB Mounting

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-P	AC: 100/120, 200/240 DC: 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-P	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

DIN Track Mounting Accessories

Applicable products	Name	Model	Minimum packing unit
Adaptor Surface Connection Socket	DIN Track	PFP-100N	10 pcs.
		PFP-50N	
		PFP-100N2	
	End plate	PFP-M	
	Spacer	PFP-S	

Note. Order the models above in increments of the minimum quantity packaged.

E-bracket/Adapter/Socket Mounting (with test button) Quick-connect Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-TJ	AC: 24, 100/120, 200/240 DC: 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-TJ	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

Upper Bracket Mounting (with test button) Quick-connect Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-TUBJ	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	20 pcs./tray
2 poles	G7L-2A-TUBJ	AC: 12, 24, 50, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

E-bracket/Adapter Mounting (with test button) Screw Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-BJ	AC: 12, 24, 100/120, 200/240 DC: 12, 24	20 pcs./tray
2 poles	G7L-2A-BJ	AC: 24, 100/120, 200/240 DC: 12, 24, 48, 100	

Upper Bracket Mounting (with test button) Screw Terminal

Number of poles	Model	Rated coil voltage	Minimum packing unit
1 pole	G7L-1A-BUBJ	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48	20 pcs./tray
2 poles	G7L-2A-BUBJ	AC: 24, 100/120, 200/240 DC: 6, 12, 24, 48, 100	

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G7L-1A-T AC12

└─ Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as □□ VDC.

Note 2. Refer to the precautions on **PCB Relays provided in General**

Information of the Relay Product Data Book, and "w -□-3" for coil characteristics of AC operation.

E-bracket/Adaptor/Socket/Cover

Applicable Relay models	Name	Model	Minimum packing unit
G7L-1A-T G7L-1A-TJ G7L-1A-B G7L-1A-BJ G7L-2A-T G7L-2A-TJ G7L-2A-B G7L-2A-BJ	E-bracket	R99-07	10 pcs.
G7L-1A-T G7L-1A-TJ G7L-2A-T G7L-2A-TJ G7L-2A-B G7L-2A-BJ	Adapter	P7LF-D	1 pcs.
G7L-1A-T G7L-1A-TJ G7L-2A-T G7L-2A-TJ	Front-connecting Socket	P7LF-06	1 pcs.
G7L-1A-B G7L-1A-BJ G7L-1A-BUB G7L-1A-BUBJ G7L-2A-B G7L-2A-BJ G7L-2A-BUB G7L-2A-BUBJ	Cover	P7LF-C	1 pcs.

Note. Order the models above in increments of the minimum quantity packaged.

Ratings

Coil

Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (H)		Must operate voltage	Must release voltage	Max. permissible voltage	Power consumption (VA-W)
Rated voltage			Armature ON	Armature OFF	On the basis of rated voltage			
12 VAC	142	17.0 to 20.4			75% max.	15% min.	110%	Approx. 1.7 to 2.5
24 VAC	71							
50 VAC	34							
100 to 120 VAC	17.0 to 20.4				75 V max.	18 V min.	132 V	
200 to 240 VAC	8.5 to 10.2				150 V max.	36 V min.	264 V	
6 VDC	317	18.9	0.09	0.21	75% max.	15% min.	110%	Approx. 1.9
12 VDC	158	75	0.37	0.88				
24 VDC	79	303	1.42	3.54				
48 VDC	40	1220	6.1	15.3				
100 VDC	19	5260	21.3	60.0				

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for AC rated current and ±15% for DC coil resistance.

2. The inductances shown above are reference values.

3. Performance characteristic data are measured at a coil temperature of 23°C.

4. The maximum allowable coil voltage refers to the maximum value in a varying range of operating power voltage, measured at ambient temperature 23°C.

5. The "to" (for example "100 to 120") represents the range of rated voltages.

Contacts

Item	Contact Form load	G7L-1A-T□ G7L-1A-B□		G7L-2A-T□ G7L-2A-B□		G7L-1A-P G7L-2A-P	
		Resistive load	Inductive load (cosφ = 0.4)	Resistive load	Inductive load (cosφ = 0.4)	Resistive load	Inductive load (cosφ = 0.4)
Contact type	Double break						
Contact material	Ag alloy						
Rated load	30 A at 220 VAC	25 A at 220 VAC	25 A at 220 VAC		20 A at 220 VAC		
Rated carry current	30 A		25 A		20 A		
Max. switching voltage	250 VAC						
Max. switching current	30 A		25 A		20 A		

Note. When using B-series (screw) products, since the screw diameter of the contact terminal is M4, be careful that the contact current should be 20 A or less according to JET standard (electrical appliance and material control law of Japan).

Characteristics

Contact resistance *1		50 mΩ max.
Operate time *2		30 ms max.
Release time *3		30 ms max.
Max. operating frequency	Mechanical	1,800 operations/hr
	Rated load	1,800 operations/hr
Insulation resistance *3		1,000 MΩ min
Dielectric strength	Between coil and contacts	4,000 VAC min., 50/60 Hz for 1 min
	Between contacts of same polarity	2,000 VAC, 50/60 Hz for 1 min
	Between contacts of different polarity (DPST-NO model)	
Impulse withstand voltage		10,000 V between coil and contact *4
Vibration resistance	Destruction	10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)
	Malfunction	10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)
Shock resistance	Destruction	1,000 m/s ²
	Malfunction	100 m/s ²
Endurance	Mechanical	1,000,000 operations min. (at 1,800 operations/hr)
	Electrical *5	100,000 operations min. (at 1,800 operations/hr under rated load)
Failure rate (P level) (reference value *6)		100 mA at 5 VDC
Weight		Approx. 90 g: Quick-connect terminal models Approx. 100 g: PCB terminal models Approx. 120 g: Screw terminal models

Note. The values given above are initial values.

*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.

*2. Measurement conditions: Rated operating voltage applied, not including contact bounce.

*3. Measurement conditions: The insulation resistance was measured with a 500-VDC megohmmeter at the same locations as the dielectric strength was measured.

*4. JEC-212 (1981) Standard Impulse Wave Type (1.2x50μs).

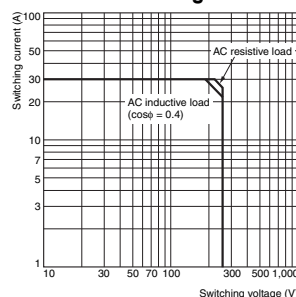
*5. Ambient temperature: 23°C

*6. This value was measured at a switching frequency of 60 operations/min.

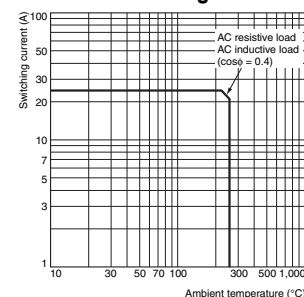
Ambient operating temperature	-25°C to 60°C (with no icing or condensation)
Ambient operating humidity	5% to 85%

Engineering Data

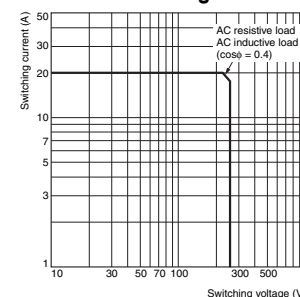
G7L-1A-T (TJ) (TUB) (TUBJ) G7L-1A-B (BJ) (BUB) (BUBJ) Maximum Switching Power



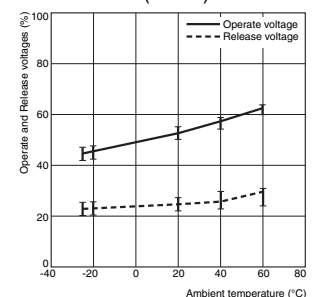
G7L-2A-T (TJ) (TUB) (TUBJ) G7L-2A-B (BJ) (BUB) (BUBJ) Maximum Switching Power



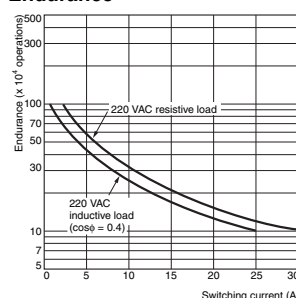
G7L-1A-P G7L-2A-P Maximum Switching Power



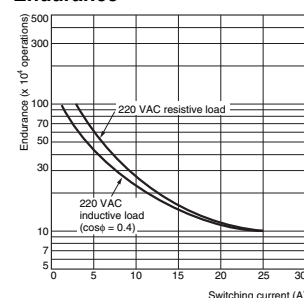
Ambient Temperature vs. Operate and Release Voltage G7L-1A VAC (60 Hz)



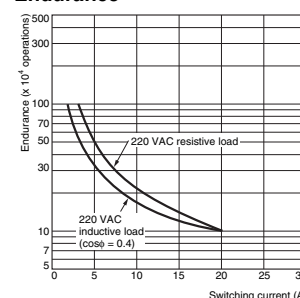
Endurance



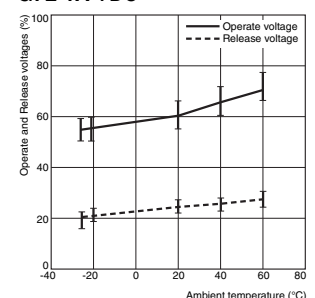
Endurance



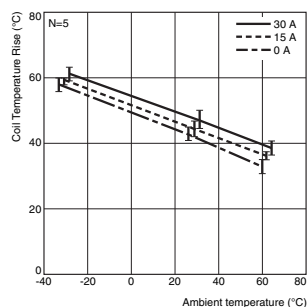
Endurance



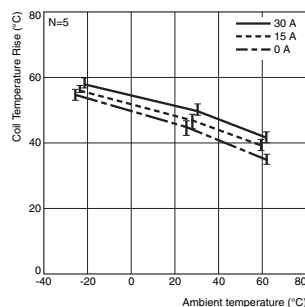
G7L-1A VDC



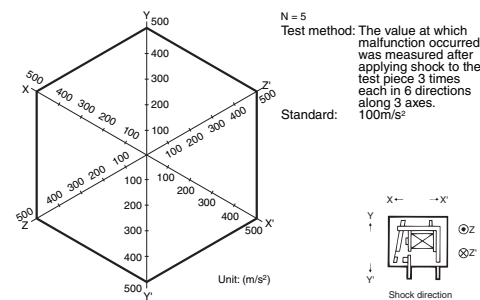
Ambient Temperature vs. Coil Temperature Rise G7L-1A 120 VAC (50 Hz)



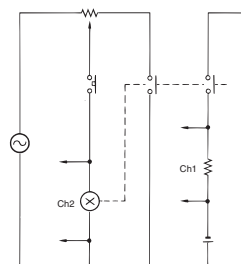
G7L-1A VDC



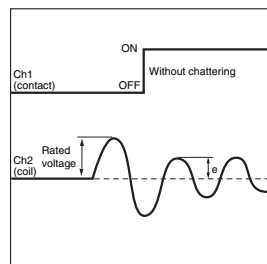
Shock Malfunction G7L-2A-T (TUB) 100 to 120 VAC



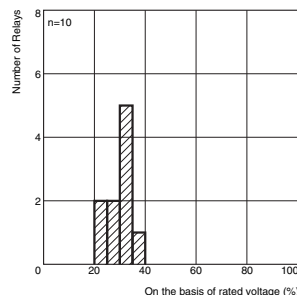
Momentary Voltage Drop Test G7L-2A-T (TUB) 100 to 120 VAC Test Circuit



Wave resulted from test

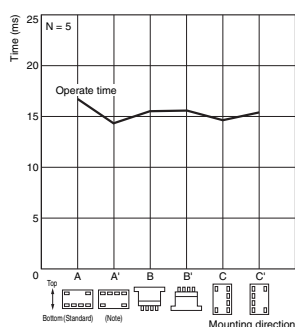


Voltage distribution of wave e which chattering does not occur.

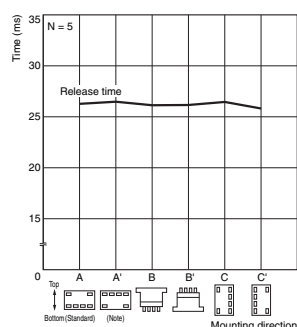


Characteristic variation resulted from different mounting directions G7L-2A-T (TUB) 100 to 120 VAC

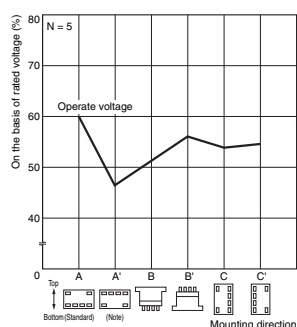
Operate time



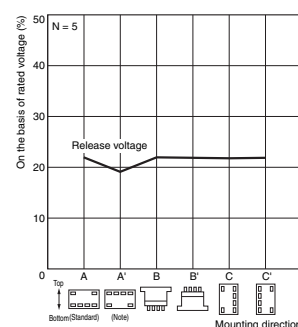
Release time



Operate voltage

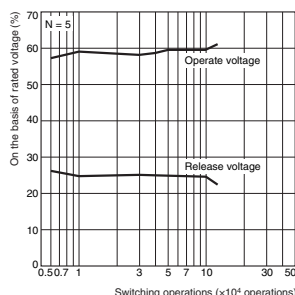


Release voltage

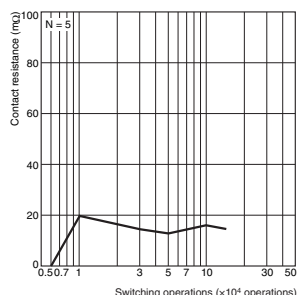


(Note.)The mounting direction A' deteriorates switching performance.

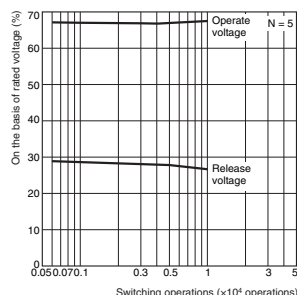
Actual Load Endurance Test G7L-2A 100 to 200 VAC Operate and Release voltages N = 5



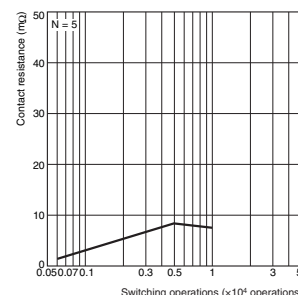
Contact resistance



Operate and Release voltages N = 5

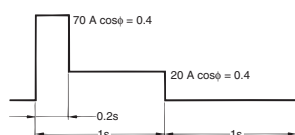


Contact resistance



Load conditions

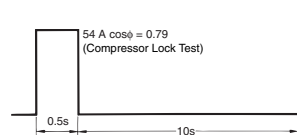
- 1 φ 220 VAC



- Applied coil voltage: 100% of rated voltage

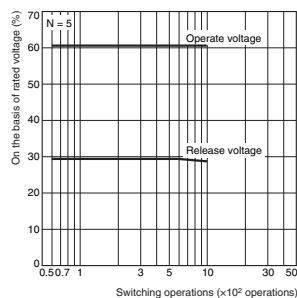
Load conditions

- 1 φ 220 VAC

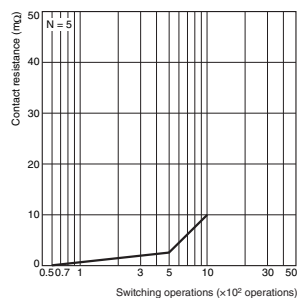


- Applied coil voltage: 100% of rated voltage

G7L-2A 100 to 200 VAC Operate and Release voltages N = 5

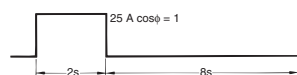


Contact resistance



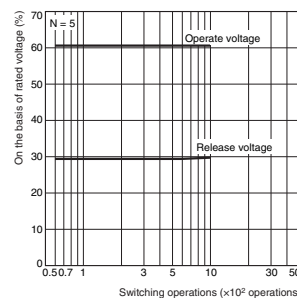
Load conditions

- 1 ϕ 220 VAC

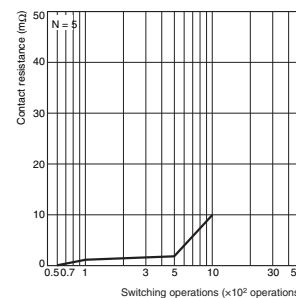


- Applied coil voltage: 75% of rated voltage

Operate and Release voltages N = 5

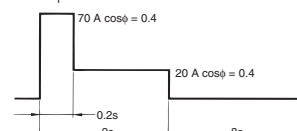


Contact resistance



Load conditions

- 1 ϕ 220 VAC



- Applied coil voltage: 75% of rated voltage

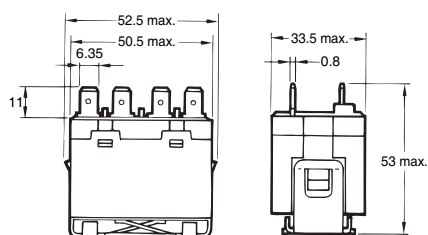
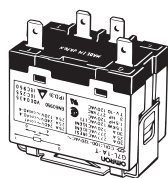
■ Dimensions

● E-bracket Mounting

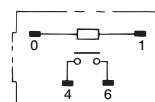
Quick-connect Terminals

Note. E-brackets are sold separately.

G7L-1A-T

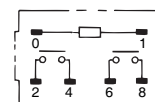
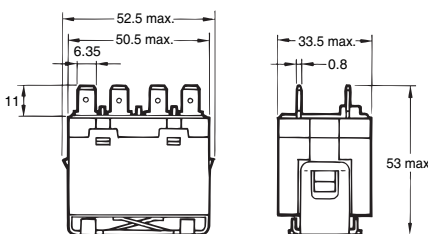
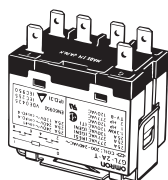


Terminal Arrangement/ Internal Connections (Top View)



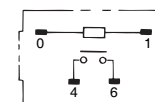
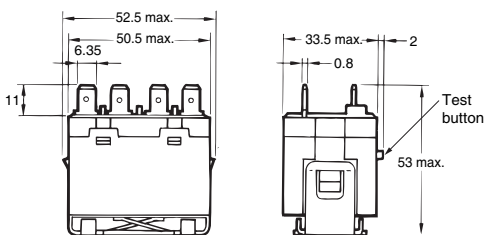
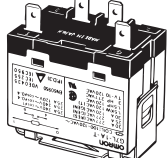
(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

G7L-2A-T



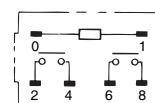
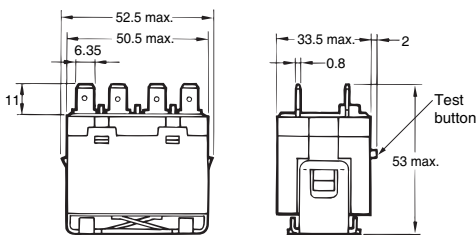
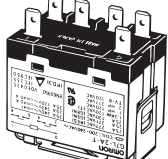
(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

G7L-1A-TJ (with Test Button)



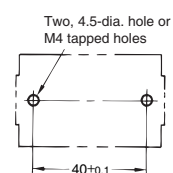
(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

G7L-2A-TJ (with Test Button)



(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

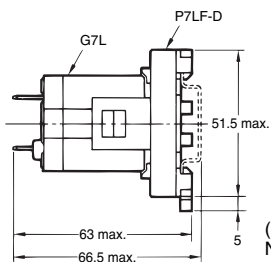
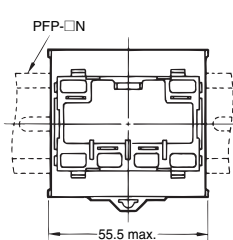
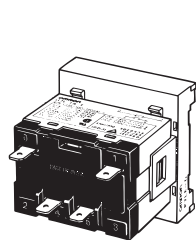
Mounting Holes



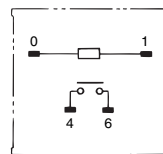
● Adapter Mounting Quick-connect Terminals

- Note 1. The DIN Track Mounting Adapter and DIN tracks are sold separately.
2. The DIN Track Mounting Adapter can be track-mounted or screw-mounted.

G7L-1A-T

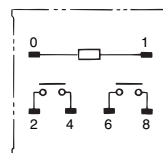
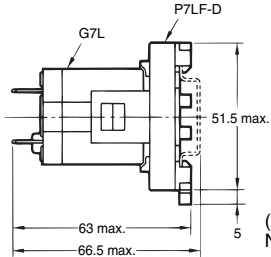
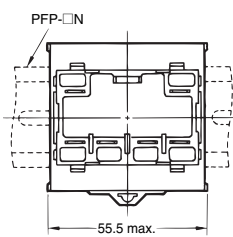
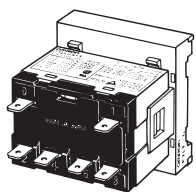


Terminal Arrangement/ Internal Connections (Top View)



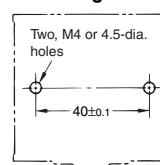
(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

G7L-2A-T



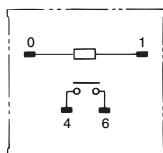
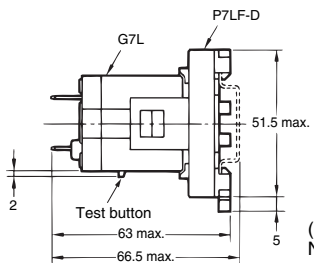
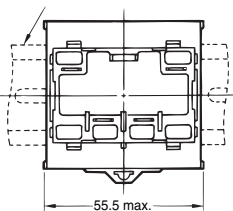
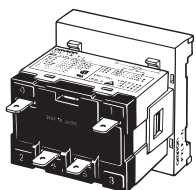
(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

Mounting Holes



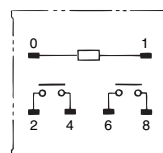
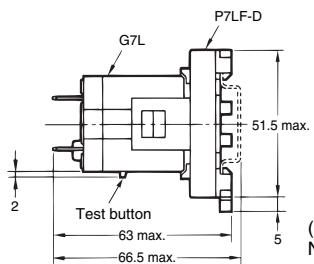
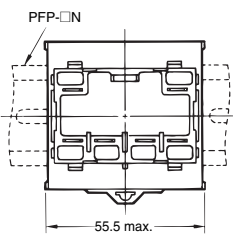
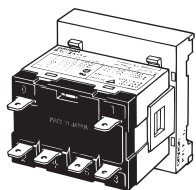
G
7
L

G7L-1A-TJ (with Test Button)



(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

G7L-2A-TJ (with Test Button)

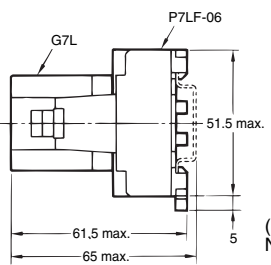
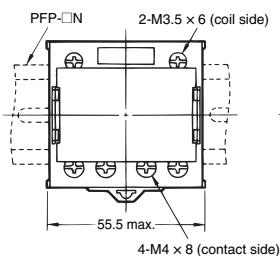
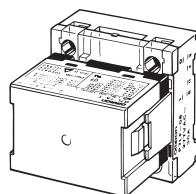


(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

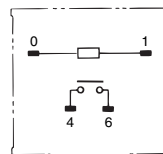
● Front-connecting Socket Mounting Quick-connect Terminals

- Note 1. The Front-connecting Socket and DIN tracks are sold separately.
2. The Front-connecting Socket can be track-mounted or screw-mounted.

G7L-1A-T

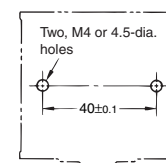


Terminal Arrangement/ Internal Connections (Top View)

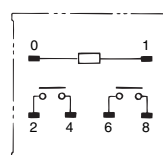
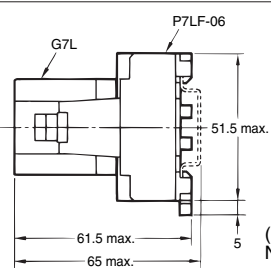
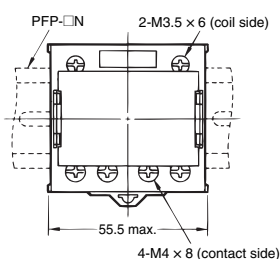
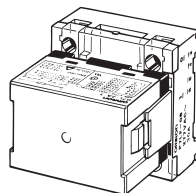


(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram

Mounting Holes



G7L-2A-T



(No coil polarity)
Note. Refer to page 12 for the coil internal connection diagram