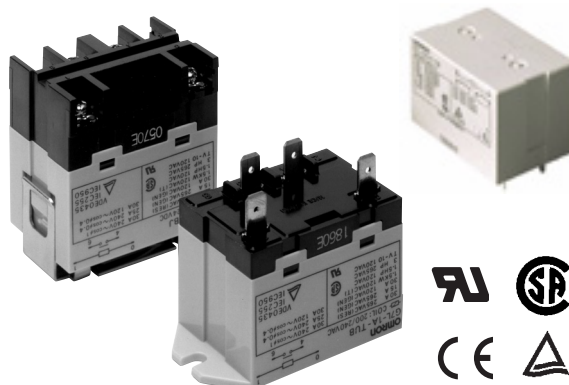


# General Purpose Relay G7L

- Ideally suited for high-inrush fluid pump controls: pool/spa, water processing, emergency, chemical industry, etc.
- High-capacity, high-withstand voltage relay with no contact chattering for momentary voltage drops up to 50% of rated voltage.
- UL Class B construction standard.
- Wide-range AC-activated coil that handles 100 to 120 VAC at either 50 or 60 Hz.
- Miniature hinge for maximum switching capacity, particularly for inductive loads.
- Flame resistant materials (UL94V-0-qualifying) used for all insulation material.
- Quick-connect, screw, and PCB terminals available.
- Standard models are UL, CSA, and TUV approved; VDE/IEC 950 versions are now available. Meet pollution degree 3, Material Group II & III.



## Ordering Information

To Order: Select the part number and add the desired coil voltage rating (e.g., G7L-1A-T-CB-AC100/120).

Type	Contact form	Model		
		Quick-connect terminal	Screw terminal	PCB terminal
E bracket (see note 1)	SPST-NO	G7L-1A-T-CB	G7L-1A-B-CB	—
	DPST-NO	G7L-2A-T-CB	G7L-2A-B-CB	—
E bracket (see note 1) (with test button)	SPST-NO	G7L-1A-TJ-CB	G7L-1A-BJ-CB	—
	DPST-NO	G7L-2A-TJ-CB	G7L-2A-BJ-CB	—
Upper bracket	SPST-NO	G7L-1A-TUB-CB	G7L-1A-BUB-CB	—
	DPST-NO	G7L-2A-TUB-CB	G7L-2A-BUB-CB	—
Upper bracket (with test button)	SPST-NO	G7L-1A-TUBJ-CB	G7L-1A-BUBJ-CB	—
	DPST-NO	G7L-2A-TUBJ-CB	G7L-2A-BUBJ-CB	—
PCB mounting	SPST-NO	—	—	G7L-1A-P-CB
	DPST-NO	—	—	G7L-2A-P-CB

- Note:**
1. E bracket or socket must be used for mounting (part number R99-07G5D). Refer to “Accessories” section for options and part numbers.
  2. For VDE approved versions, please consult OMRON.
  3. CE marking is provided only on non-PCB terminal versions.

## Model Number Legend

G7L-□□-□□□□  
1 2 3 4 5 6

- |   |   |  |
|---|---|--|
| <p><b>1. Contact form</b><br/>1A:SPST-NO<br/>2A:DPST-NO</p> <p><b>2. Terminal shape</b><br/>T:Quick-connect terminals<br/>P:PCB terminals<br/>B:Screw terminals</p> | <p><b>3. Mounting construction</b><br/>No symbol:E bracket type<br/>UB:Upper bracket type</p> <p><b>4. Special functions</b><br/>No symbol:Without test button<br/>J:With test button</p> | <p><b>5. 80: VDE approved version</b><br/>(includes UL, CSA and TÜV)</p> <p><b>6. CB: Class B insulation</b></p> <p><b>7. Rated coil voltage</b></p> |
|---|---|--|

## Accessories

### Quick-connect Terminals

Description	Model				Model
	Contact form				
	SPST-NO		DPST-NO		
E-brackets	G7L-1A-T	G7L-1A-TJ	G7L-2A-T	G7L-2A-TJ	R99-07G5D
Track mounting adaptor					P7LF-D
Front connecting socket					P7LF-06

**Note:** A socket terminal cover is supplied with the P7LF-06 socket and does not attach directly to the G7L relays. It cannot be purchased separately.

### Screw Terminals

Description	Model				Model
	Contact form				
	SPST-NO		DPST-NO		
E-brackets	G7L-1A-B	G7L-1A-BJ	G7L-2A-B	G7L-2A-BJ	R99-07G5D
Track mounting adaptor					P7LF-D
Terminal Cover					P7LF-C

**Note:** The P7LF-C terminal cover attaches directly to the G7L-B style relays. It is sold separately.

## Specifications

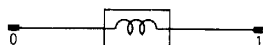
### Contact Data

Load	G7L-1A-T, G7L-1A-B		G7L-2A-T, G7L-2A-B		G7L-1A-P, G7L-2A-P	
	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4)
Rated load	30 A, 220 VAC	25 A, 220 VAC			20 A, 220 VAC	
Contact material	AgSnIn					
Carry current	30 A		25 A		20 A	
Max. operating voltage	250 VAC					
Max. operating current	30 A		25 A		20 A	
Max. switching capacity	6,600 VA	5,500 VA			4,400 VA	
Min. permissible load	100 mA, 5 VDC (please inquire for lower minimum rating)					

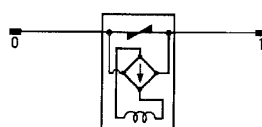
**Note:** P level:  $\lambda_{60} = 0.1 \times 10^{-6}$  operation.

### Coil Internal Circuit

DC operating coil



AC operating coil



## ■ Coil Data

### AC

Rated voltage (V)	Rated current (mA)	Resistance (Ω)	Must operate	Must release	Max. voltage	Power consumption
			% of rated voltage			
6	283	18.90	75% max.	15% min.	110% max.	Approx. 1.70 to 2.50 VA
12	142	75				
24	71	303				
50	34	1,310				
100/120	17.00/20.40	5,260	75 volts	18 volts	132 volts	
200/240	8.50/10.20	21,000	150 volts	36 volts	264 volts	

### DC

Rated voltage (V)	Rated current (mA)	Resistance (Ω)	Must operate	Must release	Max. voltage	Power consumption
			% of rated voltage			
6	317	18.90	75% max.	15% min.	110% max.	Approx. 1.90 W
12	158	75				
24	79	303				
48	40	1,220				
100	19	5,260				

**Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with tolerances of +15%/-20% for AC rated current and ±15% for DC coil resistance.

2. Performance characteristic data are measured at a coil temperature of 23°C (73°F).

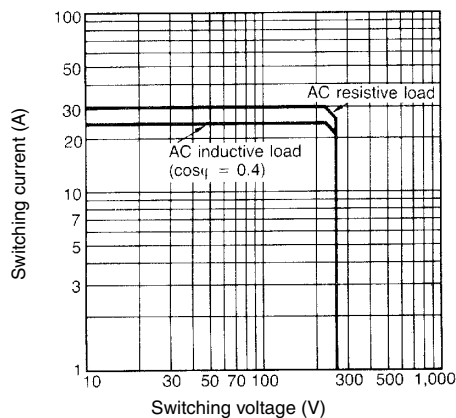
## ■ Characteristics

<b>Contact resistance</b>		50 mΩ max.
<b>Operate time</b>		30 ms max.
<b>Release time</b>		30 ms max.
<b>Max. operating frequency</b>	<b>Mechanical</b>	1,800 operations/hour
	<b>Electrical</b>	1,800 operations/hour (under rated load)
<b>Insulation resistance</b>		1,000 MΩ min. (at 500 VDC)
<b>Dielectric strength</b>		4,000 VAC, min./5,000 VAC typical, 50/60 Hz for 1 minute between coil and contacts
		2,000 VAC, 50/60 Hz for 1 minute between contacts of same pole
		2,000 VAC, 50/60 Hz for 1 minute between contacts of different poles (DPST-NO type)
<b>Impulse withstand voltage</b>		Between coil and contact: 10,000 V min./12,000 V typ. (impulse wave used: 1.20 x 50 μs)
<b>Vibration</b>	<b>Mechanical durability</b>	10 to 55 Hz; 1.50 mm (0.06 in) double amplitude
	<b>Malfunction durability</b>	10 to 55 Hz; 1.50 mm (0.06 in) double amplitude
<b>Shock</b>	<b>Mechanical durability</b>	1,000 m/s <sup>2</sup> (approx. 100 G)
	<b>Malfunction durability</b>	1,000 m/s <sup>2</sup> (approx. 10 G)
<b>Life expectancy</b>	<b>Mechanical</b>	1,000,000 operations min. (at 1,800 operations/hour)
	<b>Electrical</b>	100,000 operations min. (at 1,800 operations/hour under rated load 250,000 ops typical)
<b>Ambient temperature</b>		-25° to 60°C (-13° to 140°F)
<b>Humidity</b>		35% to 85% RH
<b>Weight</b>	Quick-connect terminal type: approx. 90 g (3.17 oz)	
	PCB terminal type: approx. 100 g (3.52 oz)	
	Screw terminal type: approx. 120 g (4.23 oz)	

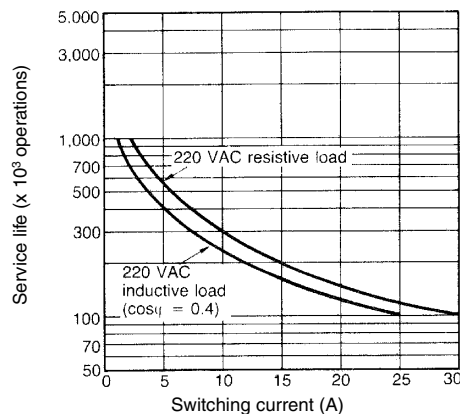
**Note:** Data shown are of initial value.

## Characteristic Data

### Maximum switching capacity



### Electrical service life

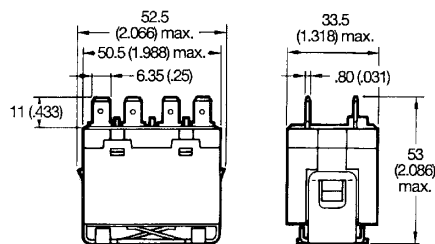


## Dimensions

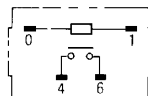
Unit: mm (inch)

### Relays

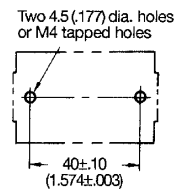
#### G7L-1A-T (E Bracket Attached)\*



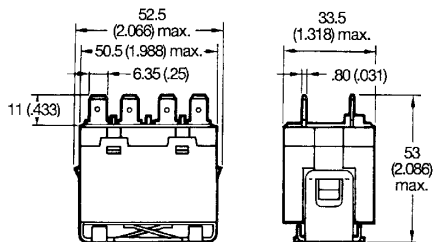
#### Terminal arrangement/ Internal connections (Top view)



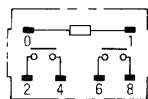
#### Mounting holes (Bottom view)



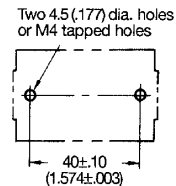
#### G7L-2A-T (E Bracket Attached)\*



#### Terminal arrangement/ Internal connections (Top view)

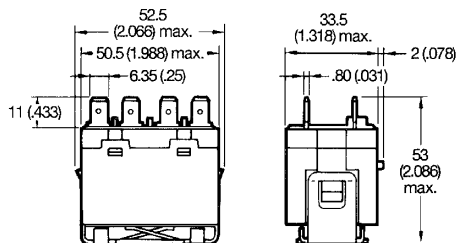


#### Mounting holes (Bottom view)

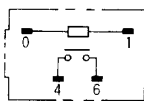


\* E bracket must be ordered separately.

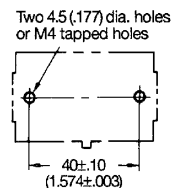
**G7L-1A-TJ  
(E Bracket Attached)\***



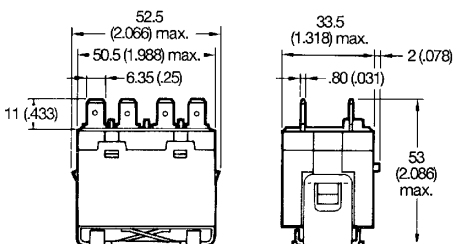
**Terminal arrangement/  
Internal connections  
(Top view)**



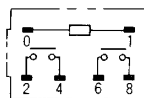
**Mounting holes  
(Bottom view)**



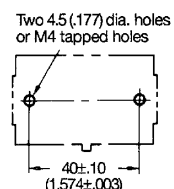
**G7L-2A-TJ  
(E Bracket Attached)\***



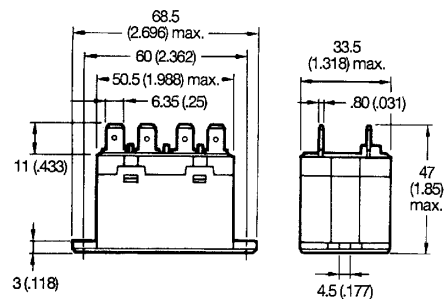
**Terminal arrangement/  
Internal connections  
(Top view)**



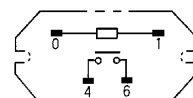
**Mounting holes  
(Bottom view)**



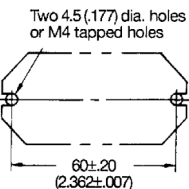
**G7L-1A-TUB**



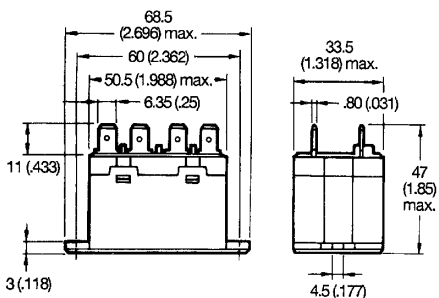
**Terminal arrangement/  
Internal connections  
(Top view)**



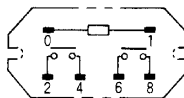
**Mounting holes  
(Bottom view)**



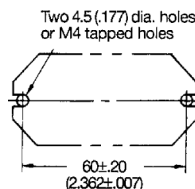
**G7L-2A-TUB**



**Terminal arrangement/  
Internal connections  
(Top view)**



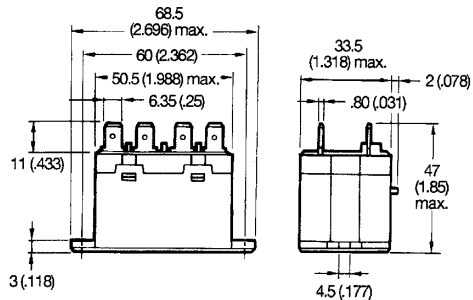
**Mounting holes  
(Bottom view)**



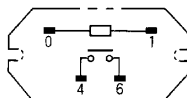
\*E bracket must be ordered separately.

Unit: mm (inch)

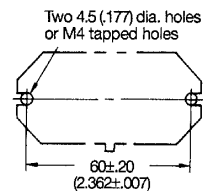
**G7L-1A-TUBJ**



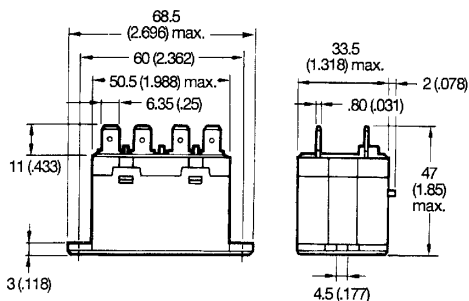
**Terminal arrangement/  
Internal connections  
(Top view)**



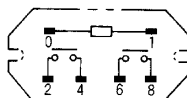
**Mounting holes  
(Bottom view)**



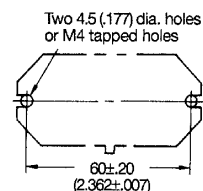
**G7L-2A-TUBJ**



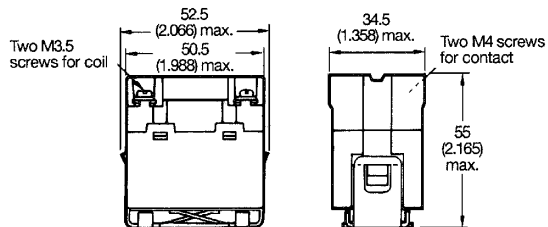
**Terminal arrangement/  
Internal connections  
(Top view)**



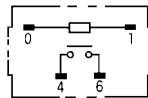
**Mounting holes  
(Bottom view)**



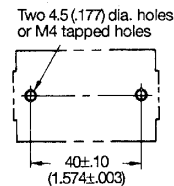
**G7L-1A-B  
(E bracket Attached)\***



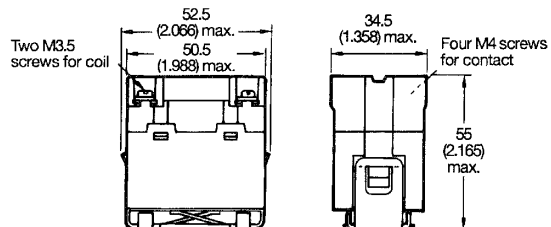
**Terminal arrangement/  
Internal connections  
(Top view)**



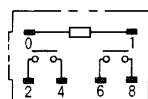
**Mounting holes  
(Bottom view)**



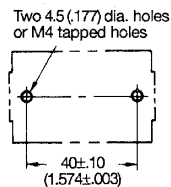
**G7L-2A-B  
(E bracket Attached)\***



**Terminal arrangement/  
Internal connections  
(Top view)**

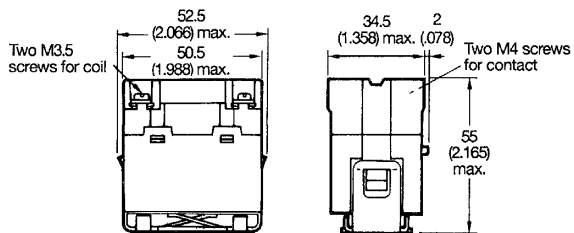


**Mounting holes  
(Bottom view)**

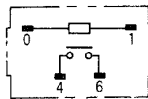


\* E bracket must be ordered separately.

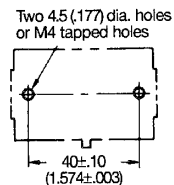
**G7L-1A-BJ**  
**(E bracket Attached)\***



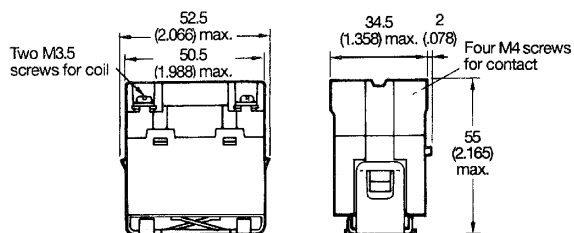
**Terminal arrangement/  
Internal connections**  
(Top view)



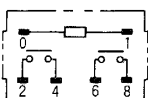
**Mounting holes**  
(Bottom view)



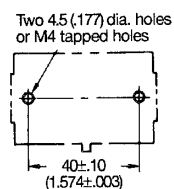
**G7L-2A-BJ**  
**(E bracket Attached)\***



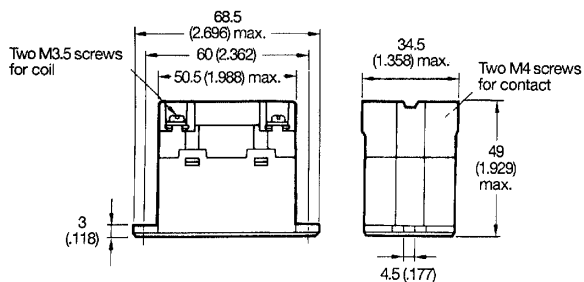
**Terminal arrangement/  
Internal connections**  
(Top view)



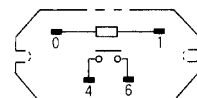
**Mounting holes**  
(Bottom view)



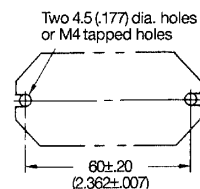
**G7L-1A-BUB**



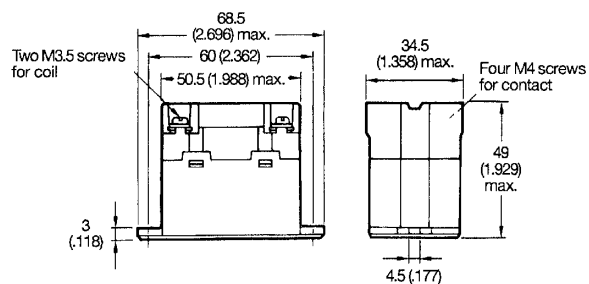
**Terminal arrangement/  
Internal connections**  
(Top view)



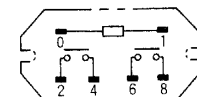
**Mounting holes**  
(Bottom view)



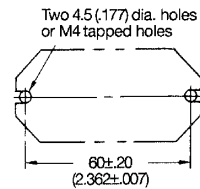
**G7L-2A-BUB**



**Terminal arrangement/  
Internal connections**  
(Top view)



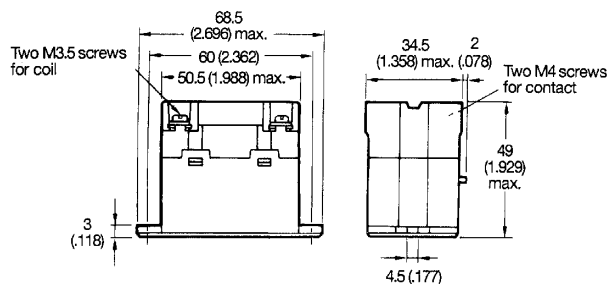
**Mounting holes**  
(Bottom view)



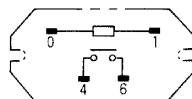
\* E bracket must be ordered separately.

Unit: mm (inch)

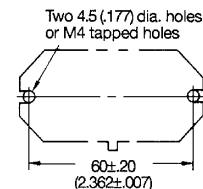
**G7L-1A-BUBJ**



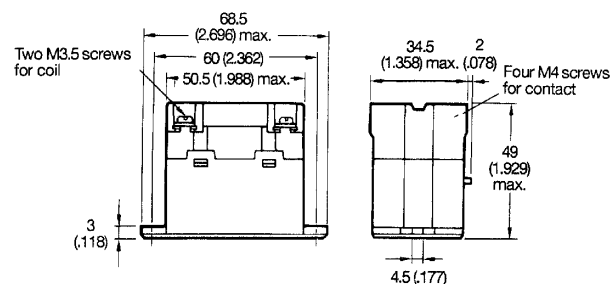
**Terminal arrangement/  
Internal connections  
(Top view)**



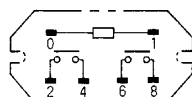
**Mounting holes  
(Bottom view)**



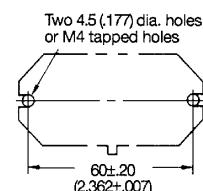
**G7L-2A-BUBJ**



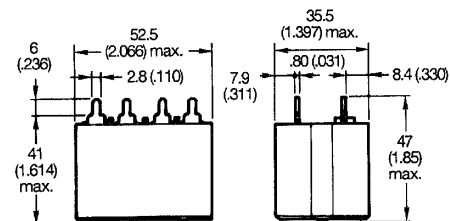
**Terminal arrangement/  
Internal connections  
(Top view)**



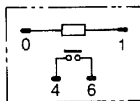
**Mounting holes  
(Bottom view)**



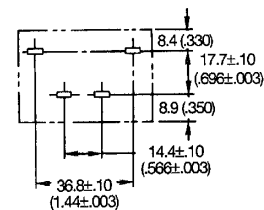
**G7L-1A-P**



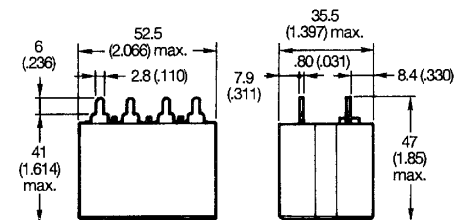
**Terminal arrangement/  
Internal connections  
(Top view)**



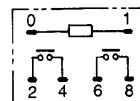
**Mounting holes  
(Bottom view)**



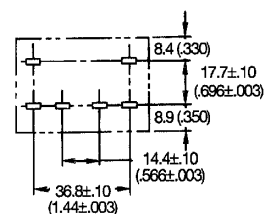
**G7L-2A-P**



**Terminal arrangement/  
Internal connections  
(Top view)**



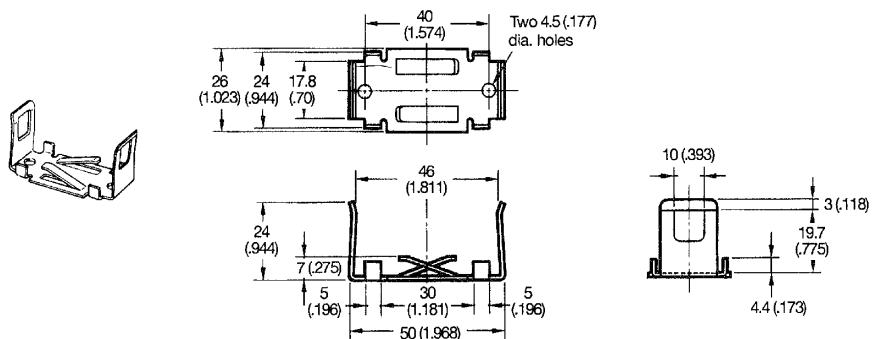
**Mounting holes  
(Bottom view)**



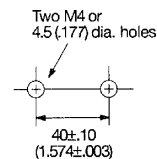


## Accessories

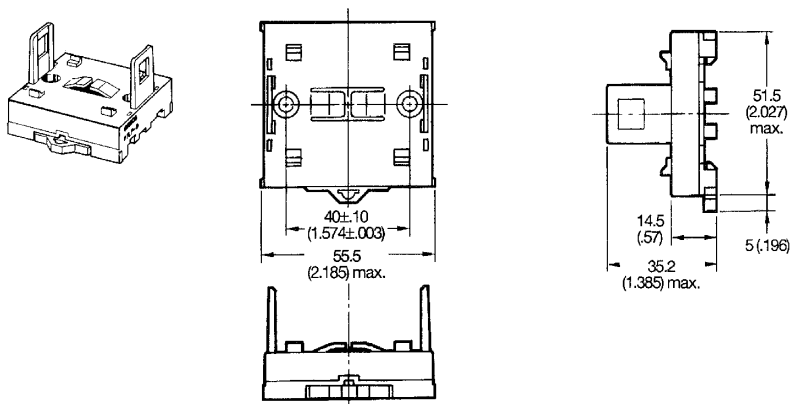
### E bracket R99-07G5D



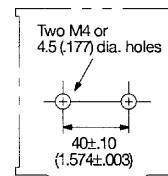
### Mounting holes (Bottom view)



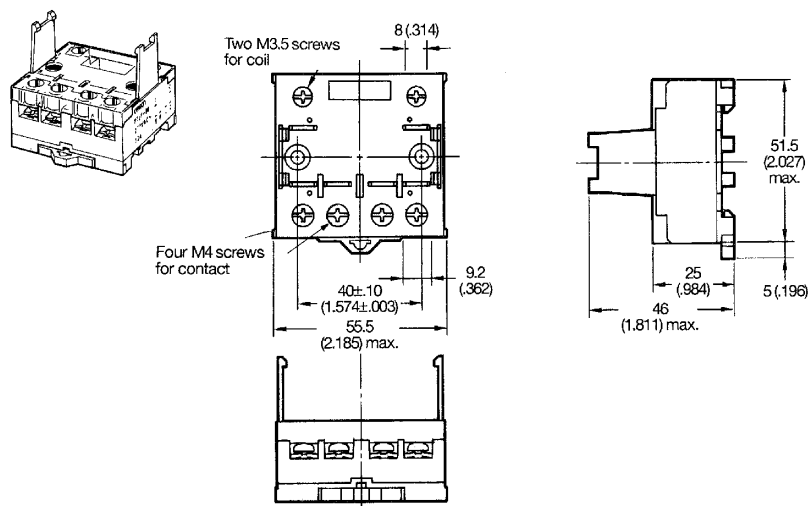
### Adaptor P7LF-D



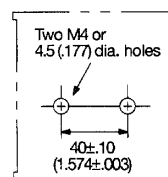
### Mounting holes (Bottom view)



### Front connecting socket P7LF-06



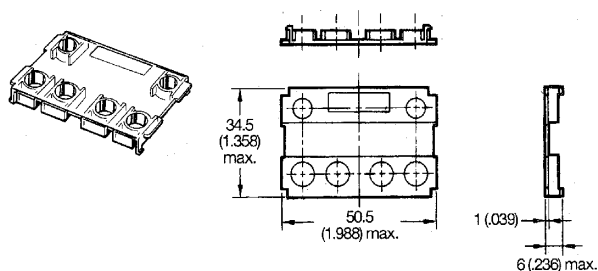
### Mounting holes (Bottom view)



- Note:**
1. To protect against electric shock, a socket terminal cover is supplied with the P7LF-06 socket.
  2. The P7LF-06 is panel or track mountable.

Unit: mm (inch)

**Cover**  
**P7LF-C**

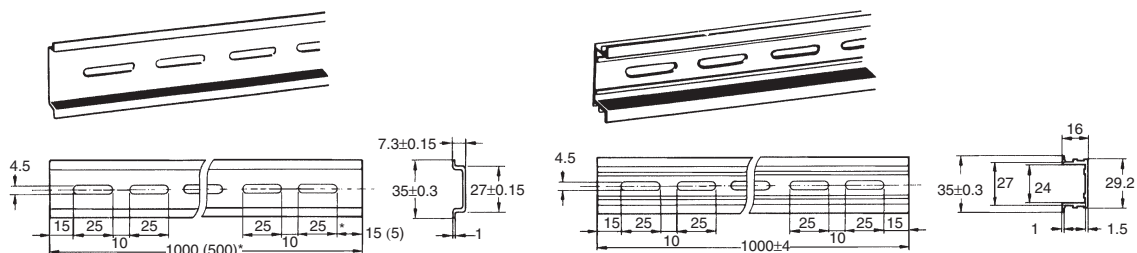


**Note:** P7LF-C cover attaches directly to G7L-B style relays. To protect against electric shock, use the P7LF-C on G7L-B terminals.

**Mounting track**

**PFP-100N, PFP-50N**  
(Conforming to EN 50022)

**PFP-100N2**  
(Conforming to EN 50022)



\* The figure in parenthesis is for PFP-50N.

**Note:** 1. It is recommended that a panel thickness of 1.60 to 2.00 mm (0.06 to 0.08 in) be used.

2. L = Length

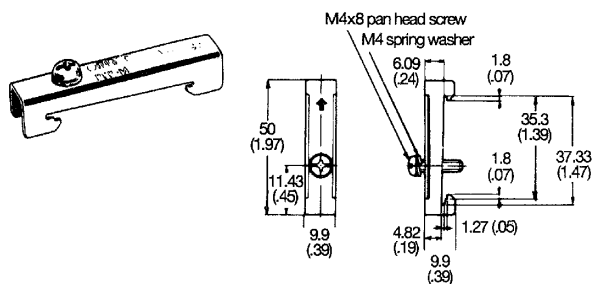
PFP-100N L = 1 m (39.00 in)

PFP-50N L = 50 cm (19.60 in)

PFP-100N2 L = 1 m (39.00 in)

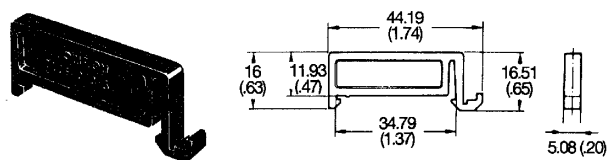
**End plate**

**PFP-M**



**Spacer**

**PFP-S**



## ■ Approvals

UL Recognized (File No. E41643) / CSA Certified (File No. LR35535) - - Ambient Temp. = 40°C

Type	Contact form	Terminal type	Contact ratings
G7L-1A-T-CB G7L-1A-TJ-CB G7L-1A-TUB-CB G7L-1A-TUBJ-CB	SPST-NO	Quick-connect	30 A, 277 VAC, General Use, 100,000 ops 1.5 kW, 120 VAC, Tungsten, 6,000 ops 1.5 HP, 120 VAC, 6,000 ops 3 HP, 277 VAC, 6,000 ops
G7L-1A-B-CB G7L-1A-BJ-CB G7L-1A-BUB-CB G7L-1A-BUBJ-CB		Screw	20 FLA/120 LRA, 120 VAC, 30,000 ops 17 FLA/102 LRA, 265 VAC, 30,000 ops TV-10, 120 VAC, 25,000 ops
G7L-1A-P-CB		PCB	
G7L-2A-T-CB G7L-2A-TJ-CB G7L-2A-TUB-CB G7L-2A-TUBJ-CB	DPST-NO	Quick-connect	
G7L-2A-B-CB G7L-2A-BJ-CB G7L-2A-BUB-CB G7L-2A-BUBJ-CB		Screw	
G7L-2A-P-CB		PCB	

**Note:** Contact Omron for actual ratings marked on G7L relays

### TÜV (File No. R9251551)

Type	Contact form	Coil ratings	Terminal type	Contact ratings
G7L-1A-T-CB G7L-1A-TJ-CB G7L-1A-TUB-CB G7L-1A-TUBJ-CB	SPST-NO	6, 12, 24, 48, 100, 110, 200, 220 VDC	Quick-connect	25 A, 240 VAC, (cosφ = 1) 25 A, 240 VAC, (cosφ = 0.4)
G7L-1A-B-CB G7L-1A-BJ-CB G7L-1A-BUB-CB G7L-1A-BUBJ-CB			Screw	30 A, 240 VAC, (cosφ = 1) 25 A, 240 VAC, (cosφ = 0.4) 30 A, 240 VAC, (cosφ = 0.4)
G7L-1A-P-CB			PCB	20 A, 240 VAC, (cosφ = 1) 20 A, 240 VAC, (cosφ = 0.4)
G7L-2A-T-CB G7L-2A-TJ-CB G7L-2A-TUB-CB G7L-2A-TUBJ-CB	DPST-NO	12, 24, 50, 100/120, 200/240 VAC	Quick-connect	25 A, 240 VAC, (cosφ = 1) 25 A, 240 VAC, (cosφ = 0.4)
G7L-2A-B-CB G7L-2A-BJ-CB G7L-2A-BUB-CB G7L-2A-BUBJ-CB			Screw	25 A, 240 VAC, (cosφ = 1) 25 A, 240 VAC, (cosφ = 0.4)
G7L-2A-P-CB			PCB	20 A, 240 VAC, (cosφ = 1) 20 A, 240 VAC, (cosφ = 0.4)

### VDE recognized type (Licence no. 1530 UG)

**Note:** 1. Please consult OMRON for details of VDE approvals.

2. The G7L relay conforms to the following standards:

Electrical safety: DIN IEC 255 Teil 1-00/DIN VDE 0435 Teil 201/05. 83  
DIN VDE 0435 Teil 201 A1/05. 90  
DIN IEC 255 Teil 0-20/DIN VDE 0435 Teil 120/10. 81  
DIN EN 60 950/VDE 0805/11. 93

EMC: prEN 50082-2, EN 55022

- The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.
- In the interest of product improvement, specifications are subject to change.
- Suffix T130 rated at 130°C
- Pollution degree 3, Material Group II & III.
- CE marking is provide only on non-PCB terminal versions.

# Precautions

## ■ Handling

- To preserve initial performance, do not drop or otherwise subject the power relay to shock.
- The case is not designed to be removed during normal handling and operation. Doing so may affect performance.
- Use the power relay in a dry environment free from excessive dust, SO<sub>2</sub>, H<sub>2</sub>S, or organic gas.
- Do not allow a voltage greater than the maximum allowable coil voltage to be applied continuously.
- Do not use the power relay outside of specified voltages and currents.
- Do not allow the ambient operating temperature to exceed the specified limit.

## ■ Installation

- Although there are not specific limits on the installation site, it should be as dry and dust-free as possible.
- PCB terminal-equipped relays weigh approximately 100 g. Be sure that the PCB is strong enough to support them. We recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.
- Quick-connect terminals can be connected to fast on receptacle #250 and positive-lock connectors.
- Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.

## ■ Cleaning PCB Terminals

- PCB terminals have semi-sealed construction which prevents flux from entering the relay base. It is recommended that the user should apply a tape seal over the vent hole prior to wave soldering or cleaning. The tape should then be removed after processing.

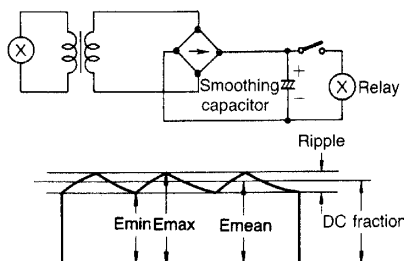
## ■ Applications

- Compressors for package air conditioners and heater switching controllers
- Switching controllers for power tools or motors
- Power controllers for water heaters
- Power controllers for dryers
- Lamp control, motor drivers, and power supply switching in copy machines, facsimiles, and other OA equipment
- Lighting controllers
- Power controllers for packers or food processing equipment
- Magnetron control in microwaves

## ■ Operating Coil

- As a rule, either a battery or a DC power supply with a maximum 5% ripple is used for the operating voltage for DC relays. Before using a rectified AC supply, confirm that the ripple is not greater than 5%. Ripple greater than this can lead to variations in the operating and reset voltages.

As excessive ripple can generate beats, the insertion of a smoothing capacitor is recommended as shown below.



$$\% \text{ of ripple} = \frac{E_{\max} - E_{\min}}{E_{\text{mean}}} \times 100$$

E<sub>max</sub>: Max. ripple  
E<sub>min</sub>: Min. ripple  
E<sub>mean</sub>: Mean DC value

- When driving a transistor, check the leakage current and connect a bleeder resistor if necessary.
- Momentary voltage drops on coil input voltage should not exceed one second duration after contact mating with no shock or vibration.

A large grid of 20 columns and 30 rows of small squares, intended for taking notes. The grid is composed of thin lines forming a uniform pattern of squares across the page.

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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