

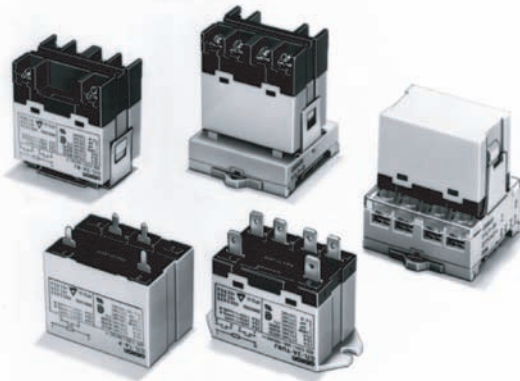
Power Relay G7L



Ph: 03 5278 8222 Fax: 03 5278 9761
65 Douro Street, North Geelong VIC 3215
www.factorycontrols.com.au

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 hinge 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.



Model Number Structure

Model Number Legend

G7L - -
 1 2 3 4 5

1. Contact Form

1A: SPST-NO
2A: DPST-NO

2. Terminal Shape

T: Quick-connect terminals
P: PCB terminals
B: Screw terminals

3. Mounting Construction

Blank: E-bracket
UB: Upper bracket




4. Special Functions

Blank: Standard mode
J: With test button

5. Rated Coil Voltage

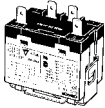
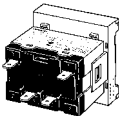
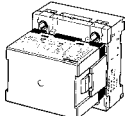
AC: 12, 24, 50, 100 to 120, 200 to 240
DC: 6, 12, 24, 48, 100

Ordering Information

| Mounting type | Contact form | Quick-connect terminals  | Screw terminals  | PCB terminals  |
|----------------------------------|--------------|--|--|--|
| E-bracket | SPST-NO | G7L-1A-T | G7L-1A-B | --- |
| | DPST-NO | G7L-2A-T | G7L-2A-B | --- |
| E-bracket (with test button) | SPST-NO | G7L-1A-TJ | G7L-1A-BJ | --- |
| | DPST-NO | G7L-2A-TJ | G7L-2A-BJ | --- |
| Upper bracket | SPST-NO | G7L-1A-TUB | G7L-1A-BUB | --- |
| | DPST-NO | G7L-2A-TUB | G7L-2A-BUB | --- |
| Upper bracket (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 |

Note: 1. When ordering, add the rated coil voltage to the model number.
Example: G7L-1A-T 12 VAC (∞)
 Rated coil voltage

■ Accessories (Order Separately)

| Terminals | Contact form | Model | R99-07 E-brackets  | P7LF-D DIN Track Mounting Adapter  | P7LF-06 Front-con- necting Socket  |
|----------------------------|--------------|-----------|---|---|---|
| Quick-connect terminals | SPST-NO | G7L-1A-T | Yes | Yes | Yes |
| | | G7L-1A-TJ | Yes | Yes | Yes |
| | DPST-NO | G7L-2A-T | Yes | Yes | Yes |
| | | G7L-2A-TJ | Yes | Yes | Yes |
| Screw terminals | SPST-NO | G7L-1A-B | Yes | Yes | No |
| | | G7L-1A-BJ | Yes | Yes | No |
| | DPST-NO | G7L-2A-B | Yes | Yes | No |
| | | G7L-2A-BJ | Yes | Yes | No |

| Applicable Relay | Name | Model |
|--|-------------------------|---------|
| G7L-1A-T/G7L-1A-TJ/G7L-1A-B/G7L-1A-BJ | E-bracket | R99-07 |
| G7L-2A-T/G7L-2A-TJ/G7L-2A-B/G7L-2A-BJ | Adapter | P7LF-D |
| G7L-1A-T/G7L-1A-TJ/G7L-2A-T/G7L-2A-TJ | Front-connecting Socket | P7LF-06 |
| 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 |

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.

Specifications

■ Coil Ratings

| Rated voltage | | Rated current | Coil resistance | Must operate voltage | Must release voltage | Max. voltage | Power consumption (approx.) |
|---------------|--------------|-----------------|-----------------|---------------------------|---------------------------|-----------------------|-----------------------------|
| AC (∧) | 12 V | 142 mA | --- | 75% max. of rated voltage | 15% min. of rated voltage | 110% of rated voltage | 1.7 to 2.5 VA (60 Hz) |
| | 24 V | 71 mA | --- | | | | |
| | 50 V | 34 mA | --- | | | | |
| | 100 to 120 V | 17.0 to 20.4 mA | --- | 75 V | 18 V | 132 V | |
| | 200 to 240 V | 8.5 to 10.2 mA | --- | 150 V | 36 V | 264 V | |
| DC (—) | 6 V | 317 mA | 18.9 Ω | 75% max. of rated voltage | 15% min. of rated voltage | 110% of rated voltage | 1.9 W |
| | 12 V | 158 mA | 75 Ω | | | | |
| | 24 V | 79 mA | 303 Ω | | | | |
| | 48 V | 40 mA | 1220 Ω | | | | |
| | 100 V | 19 mA | 5260 Ω | | | | |

- Note:**
- 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.
 - Performance characteristic data are measured at a coil temperature of 23°C.
 - ∧ indicates AC and — indicates DC (IEC417 publications).

■ Contact Ratings

| Model | G7L-1A-T□/G7L-1A-B□ | | G7L-2A-T□/G7L-2A-B□ | | G7L-1A-P/G7L-2A-P | |
|------------------------------------|--------------------------------------|--|--------------------------------------|--|--------------------------------------|--|
| | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi = 0.4$) | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi = 0.4$) | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi = 0.4$) |
| Rated load | 30 A, 220 VAC (∧) | 25 A, 220 VAC (∧) | 25 A, 220 VAC (∧) | | 20 A, 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 | |
| Max. switching power | 6,600 VAC (∧) | 5,500 VAC (∧) | 5,500 VAC (∧) | | 4,400 VAC (∧) | |
| Failure rate* (reference value) | 100 mA, 5 VDC (≡) | | | | | |

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

■ Characteristics

| | |
|---------------------------|---|
| Contact resistance | 50 mΩ max. |
| Operate time | 30 ms max. |
| Release time | 30 ms max. |
| Max. operating frequency | Mechanical: 1,800 operations/hr Electrical: 1,800 operations/hr (under rated load) |
| Insulation resistance | 1,000 MΩ min. (at 500 VDC) |
| Dielectric strength | 4,000 VAC min., 50/60 Hz for 1 min between coil and contacts 2,000 VAC, 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 (with 1.2 x 50 μs impulse wave) |
| 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: 100,000 operations min. (at 1,800 operations/hr under rated load) |
| Ambient temperature | Operating: -25°C to 60°C (with no icing) |
| Ambient humidity | Operating: 5% to 85% |
| Weight | Quick-connect terminal models: approx. 90 g PCB terminal models: approx. 100 g Screw terminal models: approx. 120 g |

Note: The values given above are initial values.

■ Approved by Standards

UL 508, 1950 Recognitions (File No. E41643)

CSA 22.2 No.14 Listings (File No. LR35535)

| Model | Contact form | Coil ratings | Contact ratings | Operations |
|------------------------|--------------|-------------------------------|---|---|
| G7L-1A-T□ G7L-1A-B□ | SPST-NO | 12 to 240 VAC 5 to 220 VDC | 30 A, 277 VAC (RES) 25 A, 277 VAC (GEN) 30 A, 120 VAC (GEN) | 100 x 10 ³ (CSA; 30 x 10 ³) |
| | | | 1.5 kW, 120 VAC (T) 1.5 HP, 120 VAC | 6 x 10 ³ |
| | | | 3 HP, 277 VAC | 100 x 10 ³ (CSA; 6 x 10 ³) |
| | | | 20 FLA/120 LRA, 120 VAC 17 FLA/102 LRA, 265 VAC | 30 x 10 ³ |
| | | | TV-10, 120 VAC | 25 x 10 ³ |
| G7L-2A-T□ G7L-2A-B□ | DPST-NO | | 25 A, 277 VAC (RES) 25 A, 277 VAC (GEN) 25 A, 120 VAC (GEN) | 100 x 10 ³ (CSA; 30 x 10 ³) |
| | | | 1.3 kW, 120 VAC (T) 1 HP, 120 VAC | 6 x 10 ³ |
| | | | 2 HP, 277 VAC | 100 x 10 ³ |
| | | | 20 FLA/120 LRA, 120 VAC 17 FLA/102 LRA, 265 VAC | 30 x 10 ³ |
| | | | TV-8, 120 VAC | 25 x 10 ³ |
| G7L-1A-P | SPST-NO | | 20 A, 277 VAC (RES) 20 A, 277 VAC (GEN) 20 A, 120 VAC (GEN) | 100 x 10 ³ |
| | | | 1.5 kW, 120 VAC (T) 1.5 HP, 120 VAC | 6 x 10 ³ |
| | | | 3 HP, 277 VAC | 100 x 10 ³ (CSA; 6 x 10 ³) |
| | | | 20 FLA/120 LRA, 120 VAC 17 FLA/102 LRA, 265 VAC | 30 x 10 ³ |
| | | | TV-10, 120 VAC | 25 x 10 ³ |
| G7L-2A-P | DPST-NO | | 20 A, 277 VAC (RES) 20 A, 277 VAC (GEN) 20 A, 120 VAC (GEN) | 100 x 10 ³ (CSA; 30 x 10 ³) |
| | | | 1.3 kW, 120 VAC (T) 1 HP, 120 VAC | 6 x 10 ³ |
| | | | 2 HP, 277 VAC | 100 x 10 ³ |
| | | | 20 FLA/120 LRA, 120 VAC 17 FLA/102 LRA, 265 VAC | 30 x 10 ³ |
| | | | TV-8, 120 VAC | 25 x 10 ³ |

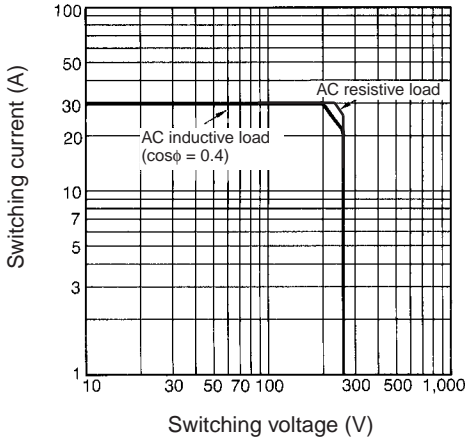
TÜV: File No. R9051158 (VDE 0435, IEC 255, IEC 950, EN60950)

| Model | Contact Form | Coil ratings | Contact ratings | Operations |
|-----------|--------------|---|--|-----------------------|
| G7L-1A-B□ | SPST-NO | 6, 12, 24, 48, 100, 110, 200, 220 VDC 12, 24, 50, 100 to 120, 200 to 240 VAC | 30 A, 240 VAC (cosφ=1.0) 25 A, 240 VAC (cosφ=0.4) 30 A, 120 VAC (cosφ=0.4) | 100 x 10 ³ |
| G7L-2A-B□ | DPST-NO | | 25 A, 240 VAC (cosφ=1.0) 25 A, 240 VAC (cosφ=0.4) | |
| G7L-1A-T□ | SPST-NO | | 25 A, 240 VAC (cosφ=1.0) 25 A, 240 VAC (cosφ=0.4) | |
| G7L-2A-T□ | DPST-NO | | 25 A, 240 VAC (cosφ=1.0) 25 A, 240 VAC (cosφ=0.4) | |
| G7L-1A-P | SPST-NO | | 20 A, 240 VAC (cosφ=1.0) 20 A, 240 VAC (cosφ=0.4) | |
| G7L-2A-P | DPST-NO | | 20 A, 240 VAC (cosφ=1.0) 20 A, 240 VAC (cosφ=0.4) | |

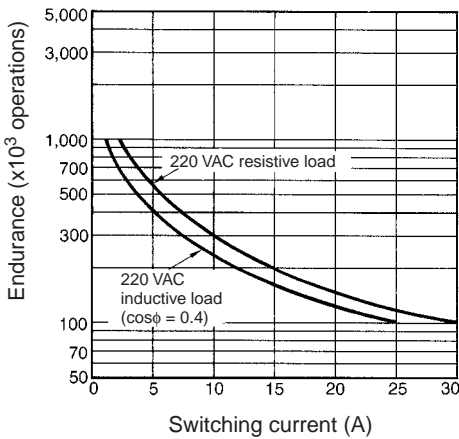
Engineering Data

G7L-1A-T/G7L-1A-B

Maximum Switching Power

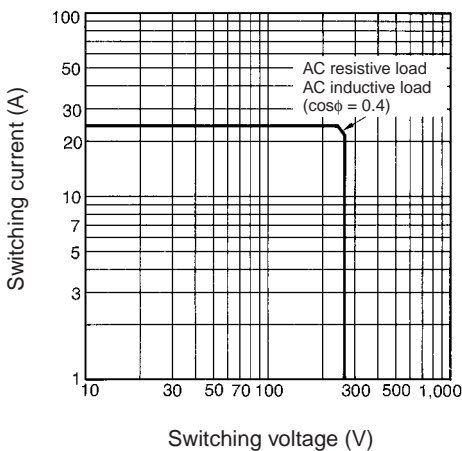


Endurance

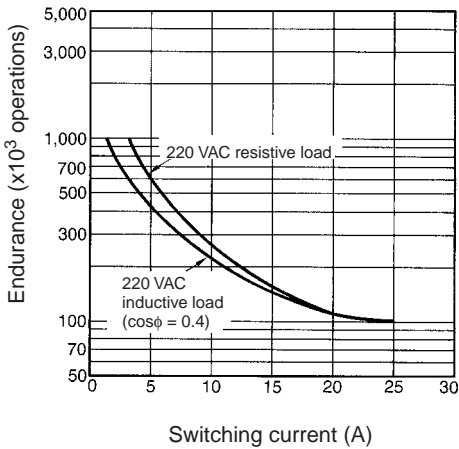


G7L-2A-T/G7L-2A-B

Maximum Switching Power

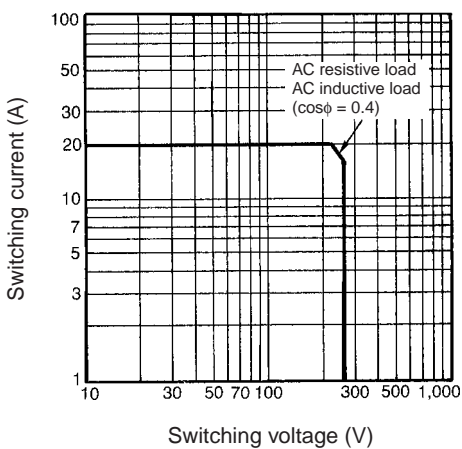


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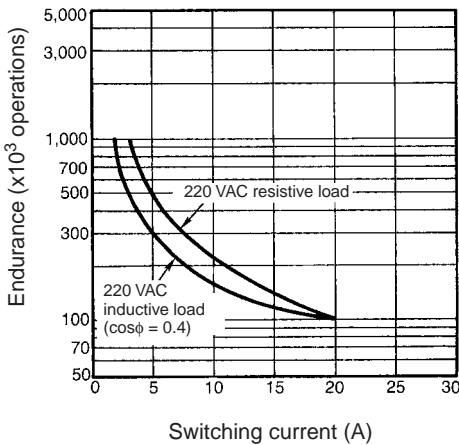


G7L-1A-P/G7L-2A-P

Maximum Switching Power



Endurance

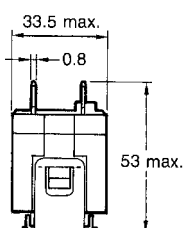
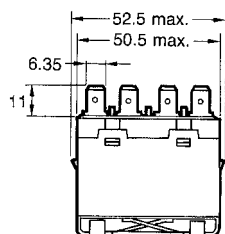
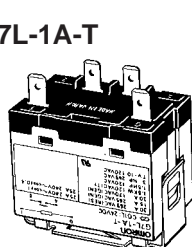


Dimensions

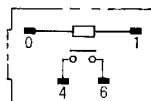
Note: 1. All units are in millimeters unless otherwise indicated.
2. E-brackets are sold separately.

Quick-connect Terminals with E-bracket

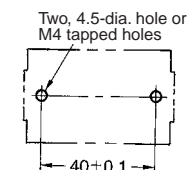
G7L-1A-T



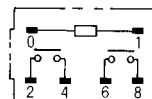
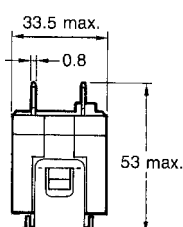
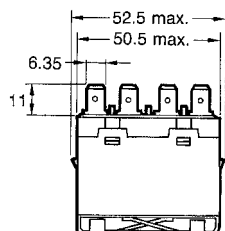
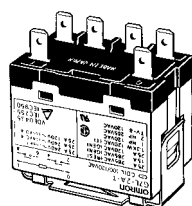
**Terminal Arrangement/
Internal Connections
(Top View)**



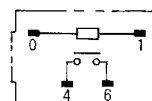
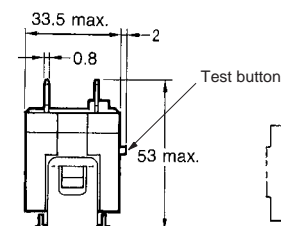
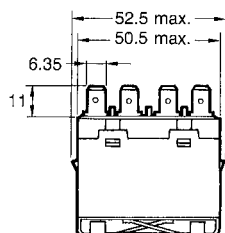
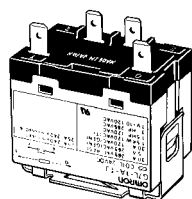
Mounting Holes



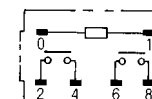
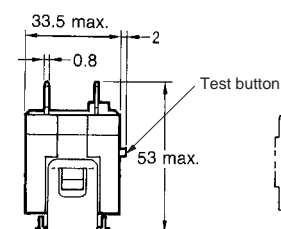
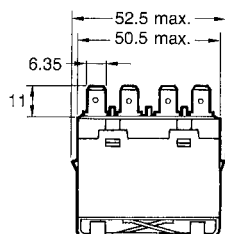
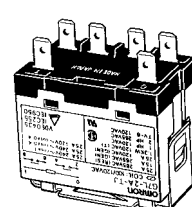
G7L-2A-T



G7L-1A-TJ with Test Button



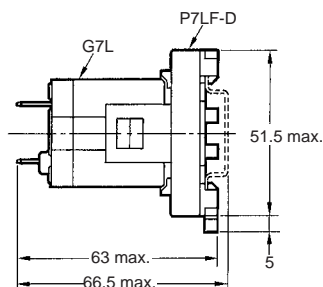
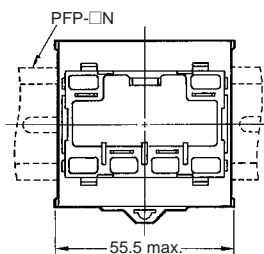
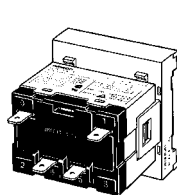
G7L-2A-TJ with Test Button



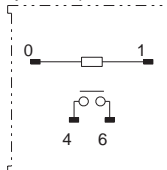
Quick-connect Terminals with DIN Track Mounting Adapter

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.

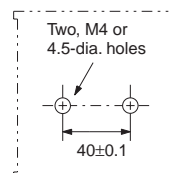
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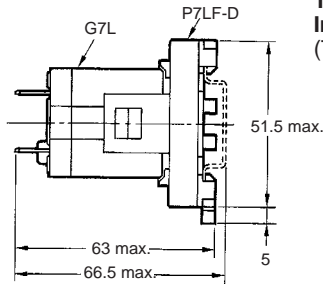
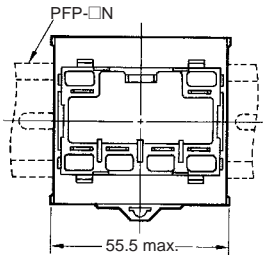
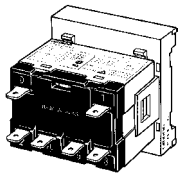
**Terminal Arrangement/
Internal Connections
(Top View)**



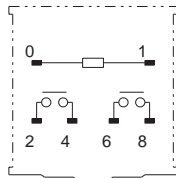
Mounting Holes



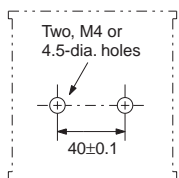
G7L-2A-T



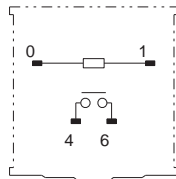
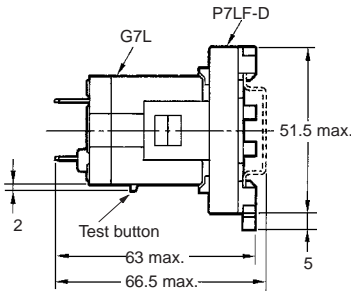
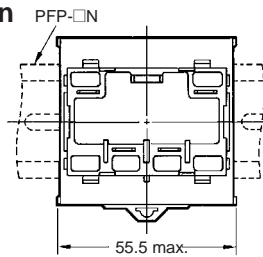
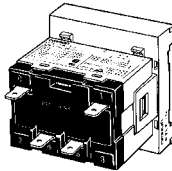
**Terminal Arrangement/
Internal Connections
(Top View)**



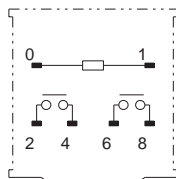
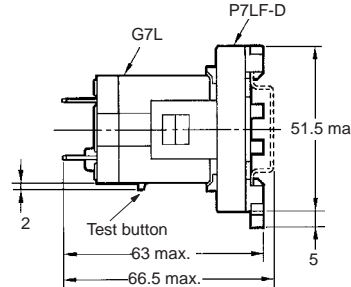
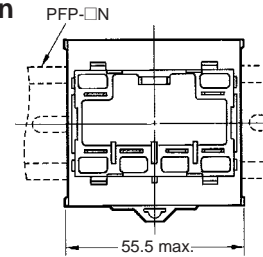
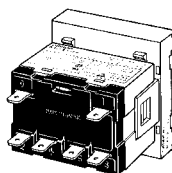
Mounting Holes



**G7L-1A-TJ
with Test Button**



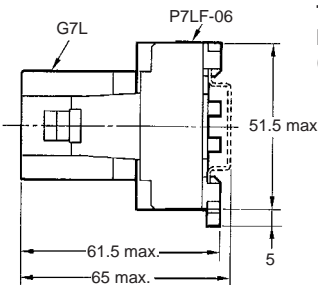
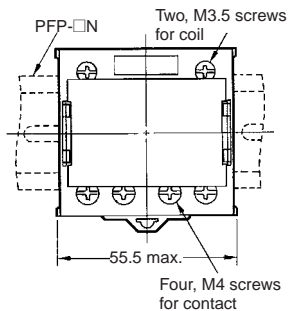
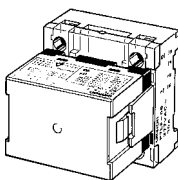
**G7L-2A-TJ
with Test Button**



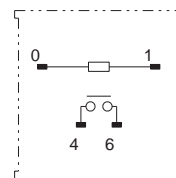
■ Quick-connect Terminals with Front-connecting Socket

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

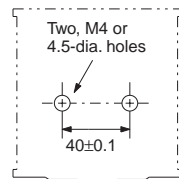
G7L-1A-T



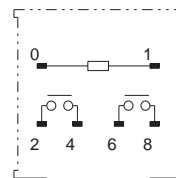
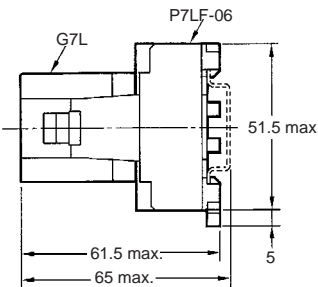
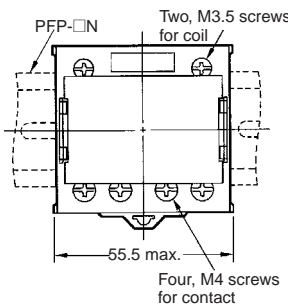
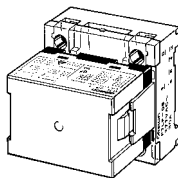
**Terminal Arrangement/
Internal Connections
(Top View)**



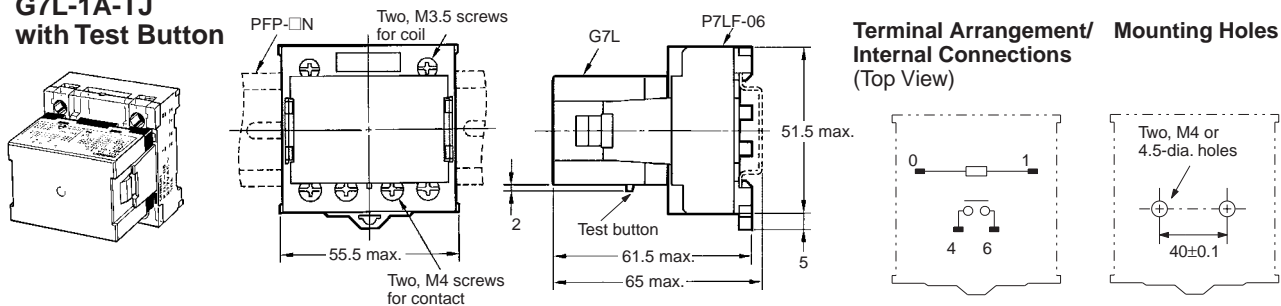
Mounting Holes



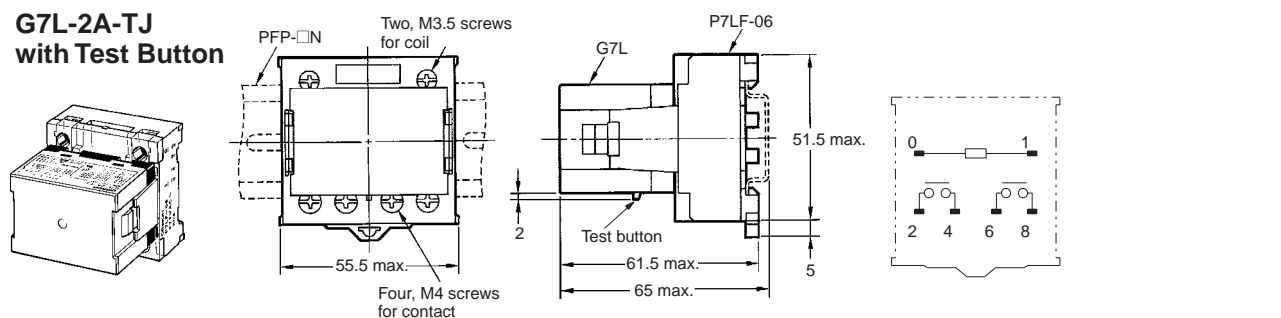
G7L-2A-T



G7L-1A-TJ with Test Button

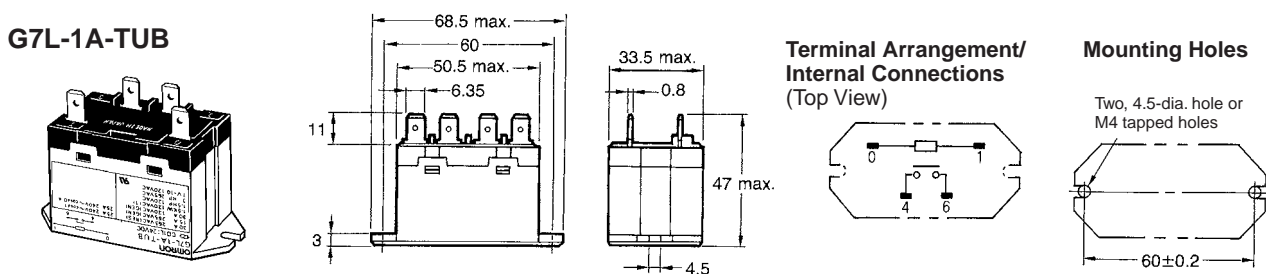


G7L-2A-TJ with Test Button

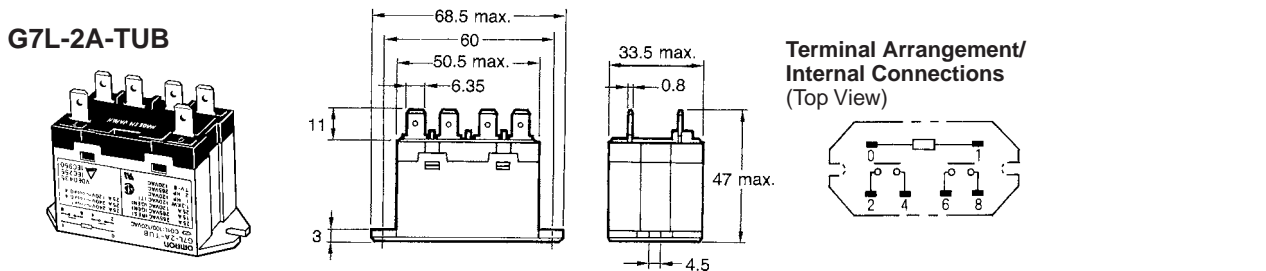


■ Quick-connect Terminals with Upper Bracket

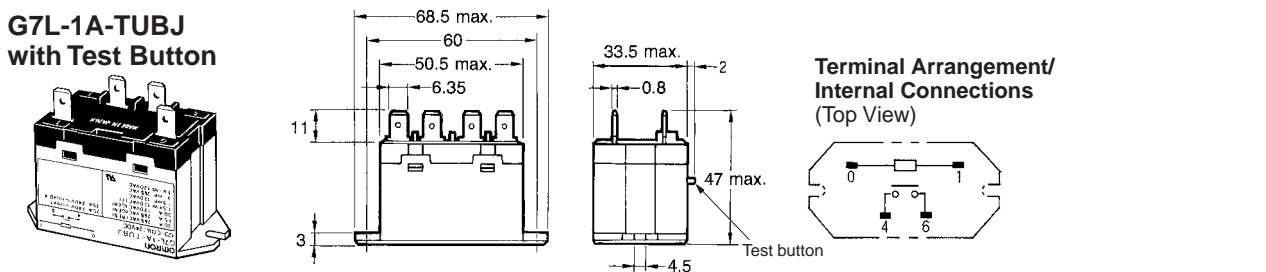
G7L-1A-TUB



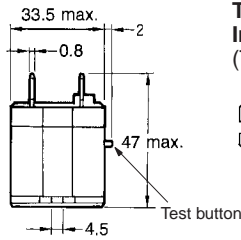
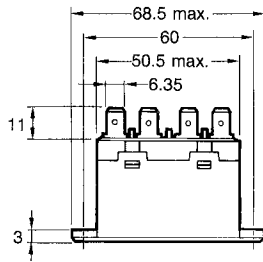
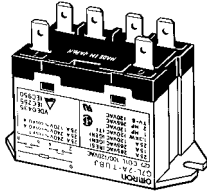
G7L-2A-TUB



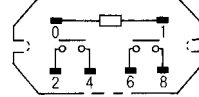
G7L-1A-TUBJ with Test Button



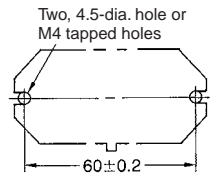
G7L-2A-TUBJ with Test Button



Terminal Arrangement/ Internal Connections (Top View)



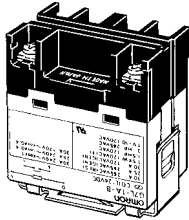
Mounting Holes



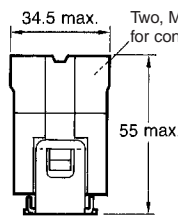
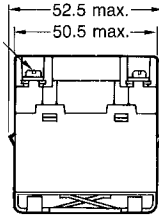
■ Screw Terminals with E-bracket

Note: E-brackets are sold separately.

G7L-1A-B

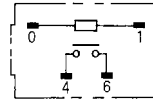


Two, M3.5 screws
for coil

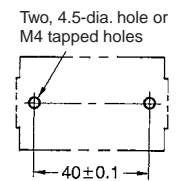


Two, M4 screws
for contact

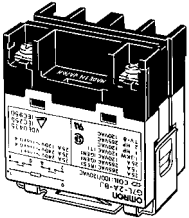
Terminal Arrangement/ Internal Connections (Top View)



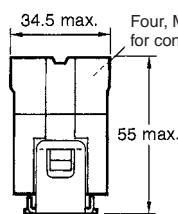
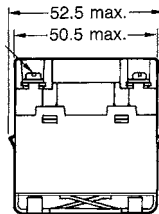
Mounting Holes



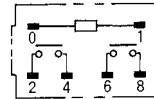
G7L-2A-B



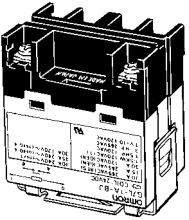
Two, M3.5 screws
for coil



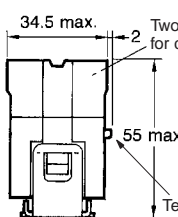
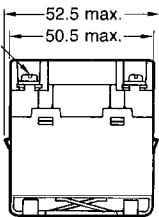
Four, M4 screws
for contact



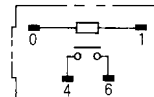
G7L-1A-BJ with Test Button



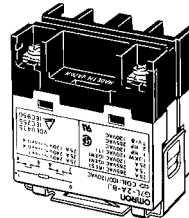
Two, M3.5 screws
for coil



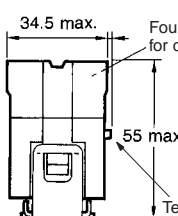
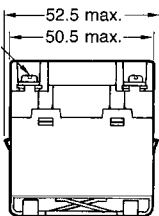
Two, M4 screws
for contact



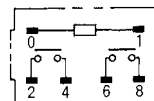
G7L-2A-BJ with Test Button



Two, M3.5 screws
for coil



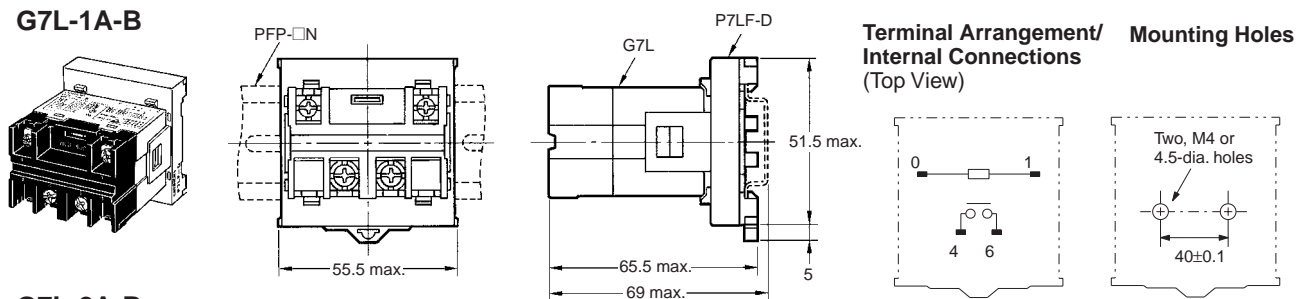
Four, M4 screws
for contact



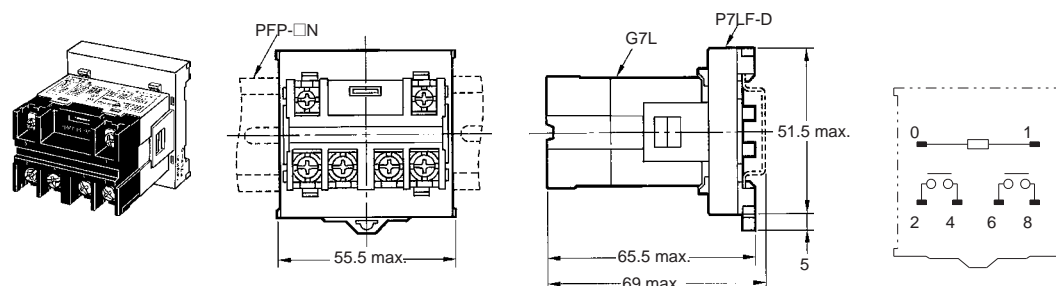
■ Screw Terminals with DIN Track Mounting Adapter

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.

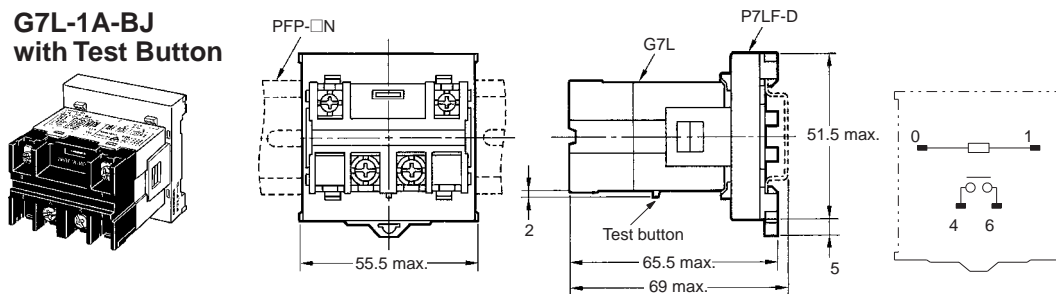
G7L-1A-B



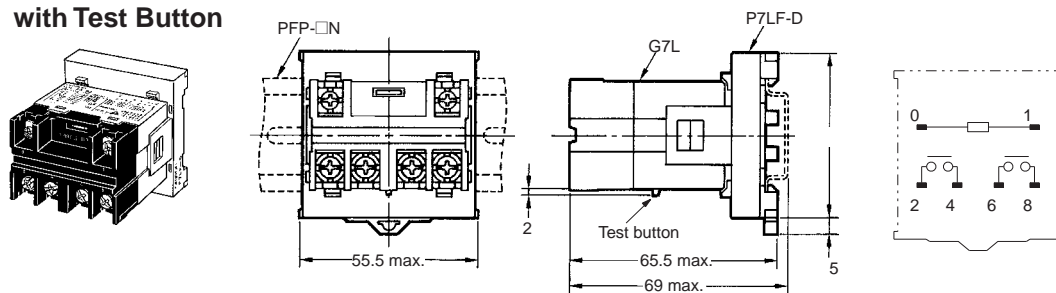
G7L-2A-B



G7L-1A-BJ with Test Button

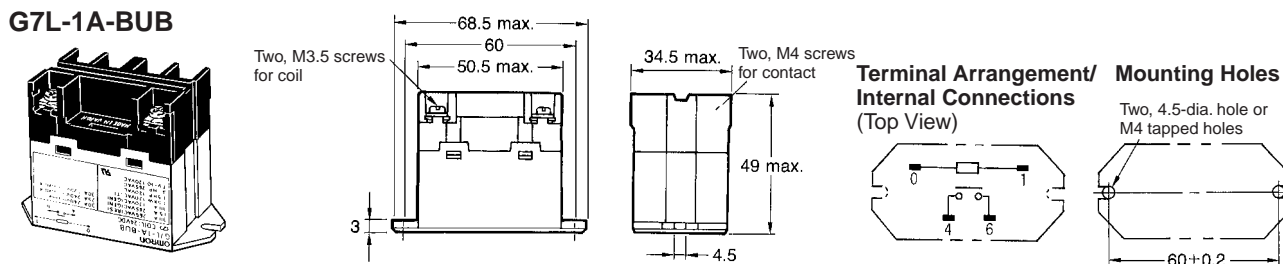


G7L-2A-BJ with Test Button

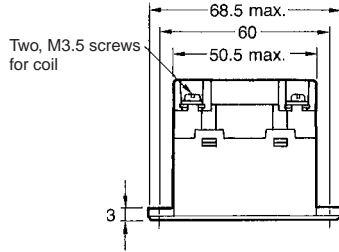
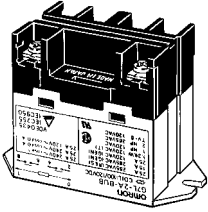


■ Screw Terminals with Upper Bracket

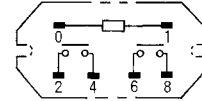
G7L-1A-BUB



G7L-2A-BUB

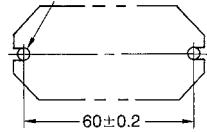


**Terminal Arrangement/
Internal Connections
(Top View)**

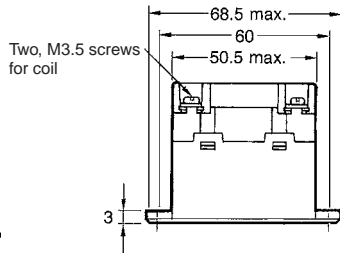
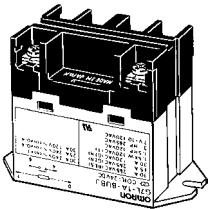


Mounting Holes

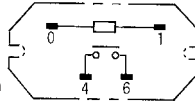
Two, 4.5-dia. hole
or M4 tapped holes



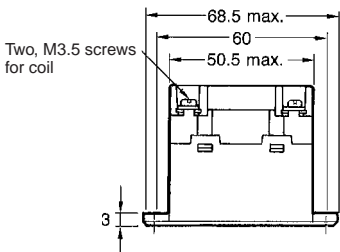
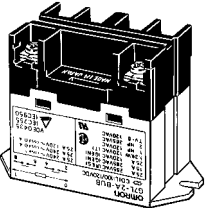
G7L-1A-BUBJ with Test Button



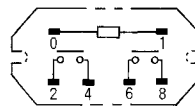
**Terminal Arrangement/
Internal Connections
(Top View)**



G7L-2A-BUBJ with Test Button

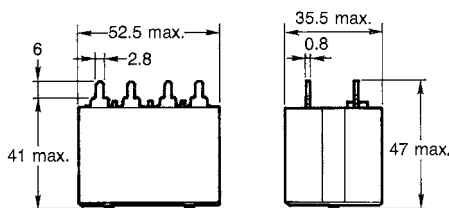
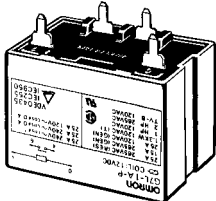


**Terminal Arrangement/
Internal Connections
(Top View)**

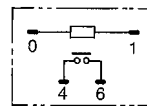


■ PCB Terminals with PCB Mounting

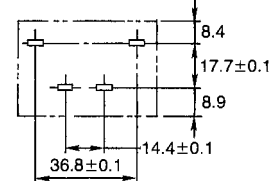
G7L-1A-P



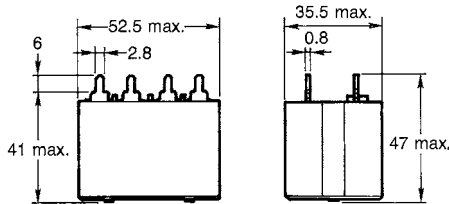
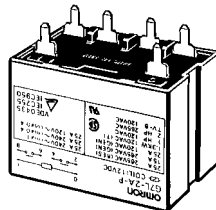
**Terminal Arrangement/
Internal Connections
(Top View)**



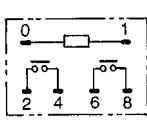
**Mounting Holes
(Bottom View)**



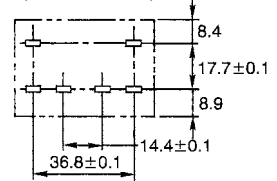
G7L-2A-P



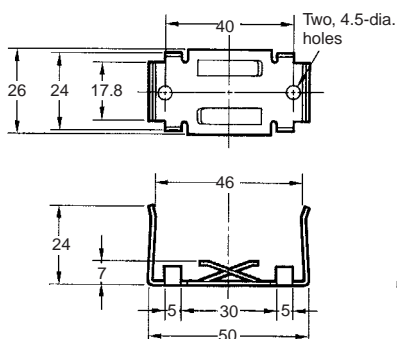
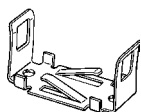
**Terminal Arrangement/
Internal Connections
(Top View)**



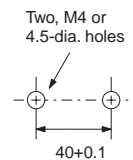
**Mounting Holes
(Bottom View)**



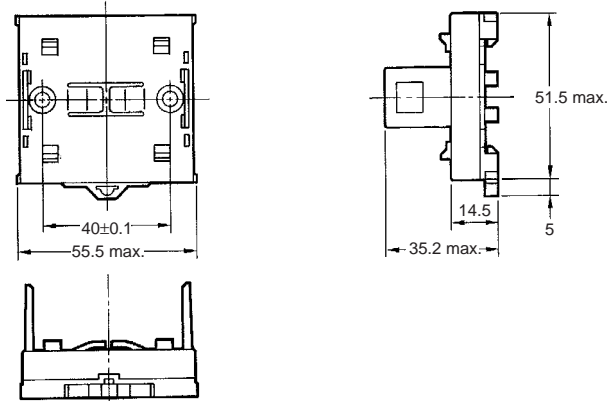
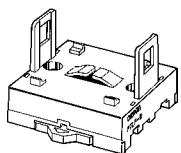
R99-07G7L E-bracket



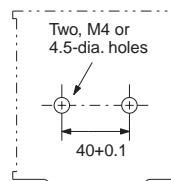
Mounting Holes (Bottom View)



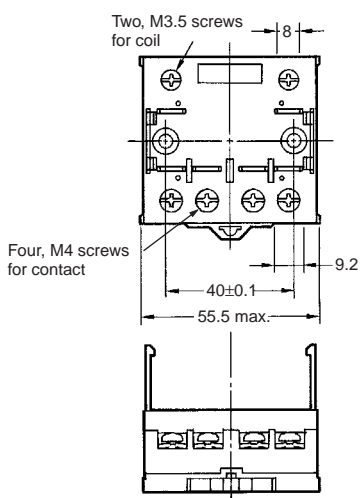
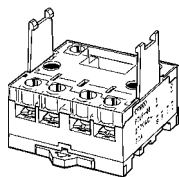
P7LF-D Adapter



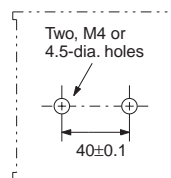
Mounting Holes (Bottom View)



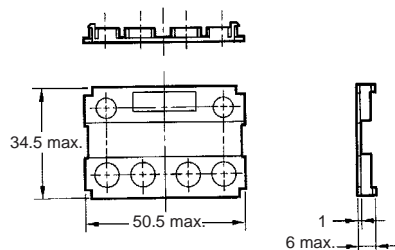
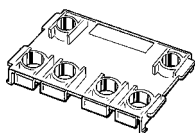
P7LF-06 Front-connecting Socket



Mounting Holes (Bottom View)



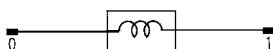
P7LF-C Cover



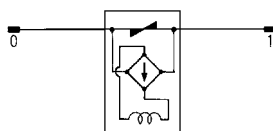
Put the P7LF-C cover onto the terminals in order to protect the user from electric shock.

Internal Coil Circuit

DC Operating Coil



AC Operating Coil



Precautions

Refer to page 11 for general precautions.

Installation

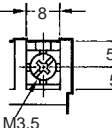
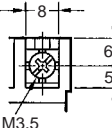
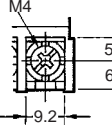
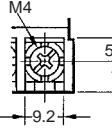
- Although there are not specific limits on the installation site, it should be as dry and dust-free as possible.
- PCB Terminal-equipped Relays weigh approximately 100 g. Be sure that the PCB is strong enough to support them. We recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.
- Quick-connect terminals can be connected to Faston receptacle #250 and positive-lock connectors.
- Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.
- Mounting torque (upper-bracket models): 0.98 N·m
- G7L Relays with test buttons must be mounted facing down.
- Be careful not to touch the test button accidentally. Doing so may turn ON the contact.
- Be sure to use the test button for test purposes only (with test-button models). The test button is used for Relay circuit tests, such as circuit continuity tests. Do not attempt to switch the load with the test button.

Cleaning PCB Terminals

- PCB terminals have flux-tight construction which prevents flux from penetrating into the Relay base housing, e.g., due to capillary action up the terminals when Relay is soldered onto the PCB. This type of Relay cannot be immersed for cleaning.

Connecting

- Refer to the following table when connecting a wire with a crimp-style terminal to the G7L.

| Terminals | Screw terminals | Front-connecting Socket |
|-----------|---|---|
| Coil |  |  |
| Contact |  |  |

Tightening torque: Coil: 0.98 N·m
Contact: 1.37 N·m

Rated Current Flow

When using B-series (screw) products, the rated current from the screw terminals (M4) should be 20 A or less according to jet standard (electrical appliance and material control law of Japan).

Minute Loads

The G7L is used for switching power loads, such as motor, transformer, solenoid, lamp, and heater loads. Do not use the G7L for switching minute loads, such as signals.

Operating Coil

If a transistor drives the G7L check the leakage current, and connect a bleeder resistor if necessary.

The AC coil is provided with a built-in full-wave rectifier. If a triac, such as an SSR, drives the G7L, the G7L may not release. Be sure to perform a trial operation with the G7L and the triac before applying them to actual use.

DIN Track Mounting Adapter and Front-connecting Socket

DIN Track Mounting

- Use a DIN-conforming 50-cm track or 1-m track (both are sold separately) for mounting a number of G7L Relays. Cut and shorten the track to an appropriate length if the required track length is less than 50 cm.
- The DIN Track Mounting Adapter and Front-connecting Socket can be mounted on the G7L with just one hand and dismantled with ease by using a screwdriver.
- To support the G7L mounted on a DIN Track Mounting Adapter or Front-connecting Socket, use the PFP-M End Plate. Put the End Plate onto the DIN Track Mounting Adapter or Front-connecting Socket so that the surface mark of the End Plate faces upwards. Then tighten the screw of the End Plate securely with a screwdriver.

Screw Mounting

- Screw-mount the DIN Track Mounting Adapter or Front-connecting Socket securely after opening screw mounting holes on them.
- When cutting or opening holes on the panel after the Front-connecting Socket is mounted, take proper measures so that the cutting chips will not fall onto the Relay terminals. When cutting or opening holes on the upper part of the panel, mask the Front-connecting Socket properly with a cover.



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www.factorycontrols.com.au

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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