

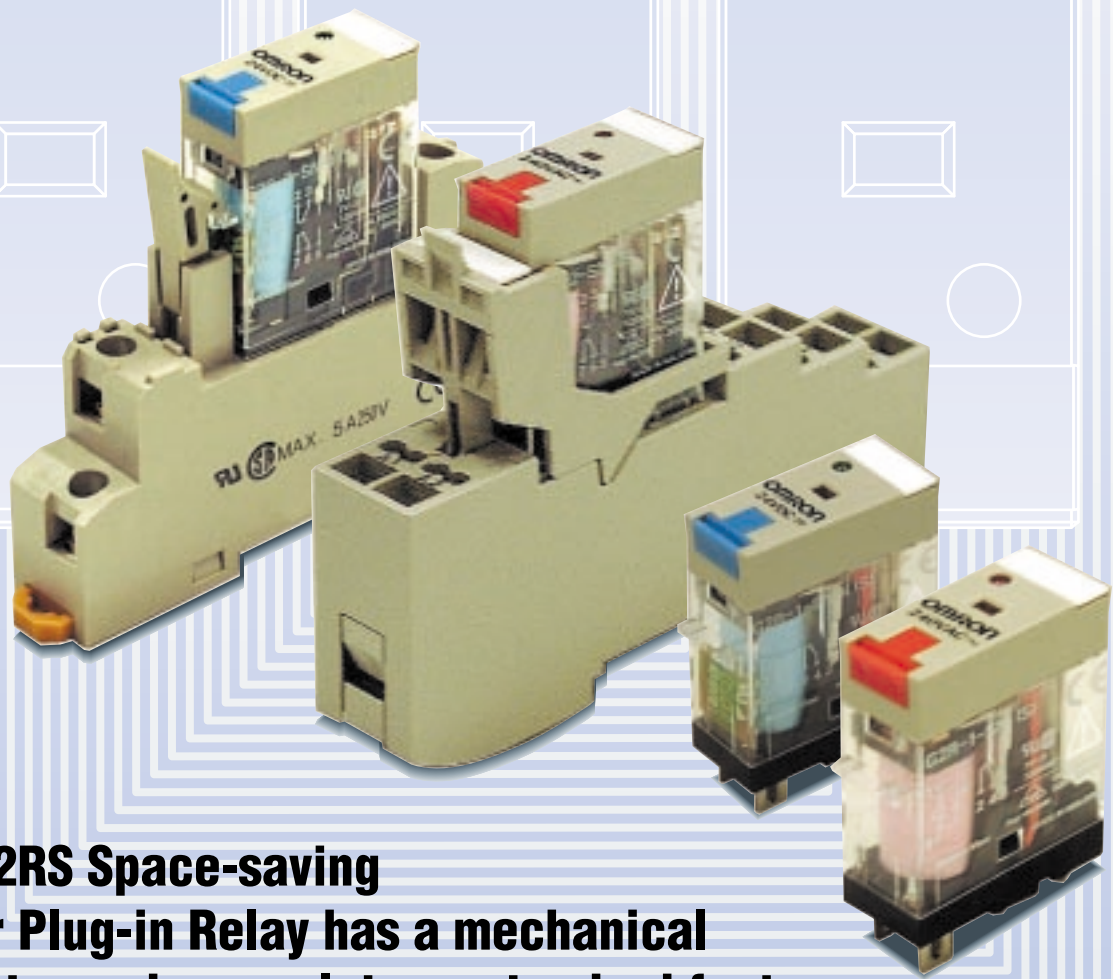
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New G2RS Series



The G2RS Space-saving Power Plug-in Relay has a mechanical indicator and nameplate as standard features. A relay with a lockable test button is also available.

Details on the New G2RS

Overview

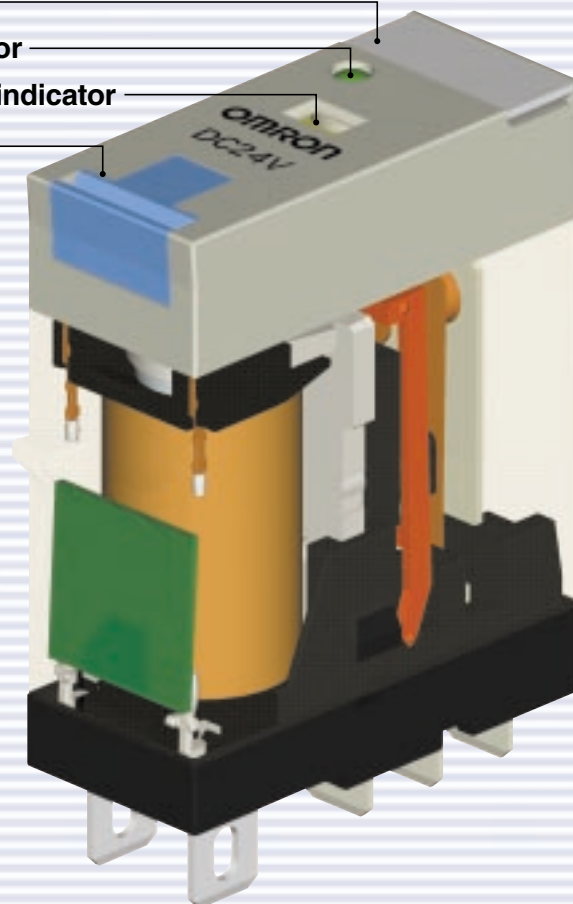
Nameplate

LED indicator

Mechanical indicator

Test button

DC: Blue
AC: Red



New Features

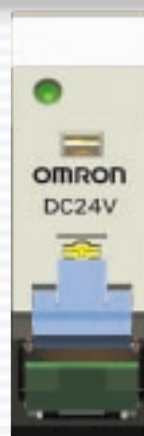
- Nameplate and mechanical indicator provided as a standard.
- Models with two-way-action test button available.
- Environment-friendly construction.

Two-way-action test button

Relay
in
operation



For
momentary
testing



For
lock
testing



Pull down the test button to the first stop position, then press the yellow button with an insulated tool to operate the contact.

Pull down the test button to the second stop position. (The contact is now in the locked position.)

General-purpose Relay G2RS

Slim and Space-saving Power Plug-in Relay

- Lockable test button models now available.
- Built-in mechanical operation indicator.
- Provided with nameplate.
- AC type is equipped with a coil-disconnection self-diagnostic function (LED type).
- High switching power (1-pole: 10 A).
- Environment-friendly (Cd, Pb free).
- Wide range of Sockets also available.



Model Number Structure

Model Number Legend

G2R - - -

1 2 3 4 5 6 7

1. Relay Function

Blank: General-purpose

2. Number of Poles

- 1: 1 pole
- 2: 2 poles

3. Contact Form

Blank: SPDT

4. Contact Type

Blank: Single

5. Terminals

S: Plug-in

6. Classification

- Blank: General-purpose
- N: LED indicator
- D: Diode
- ND: LED indicator and diode
- NI: LED indicator with test button
- NDI: LED indicator and diode with test button

7. Rated Coil Voltage

Ordering Information

List of Models

| Classification | | Enclosure rating | Coil ratings | Contact form/Model | |
|------------------|--|------------------|--------------|--------------------|------------|
| | | | | SPDT | DPDT |
| Plug-in terminal | General-purpose | Unsealed | AC/DC | G2R-1-S | G2R-2-S |
| | LED indicator | | | G2R-1-SN | G2R-2-SN |
| | LED indicator with test button | | | G2R-1-SNI | G2R-2-SNI |
| | Diode | | DC | G2R-1-SD | G2R-2-SD |
| | LED indicator and diode | | | G2R-1-SND | G2R-2-SND |
| | LED indicator and diode with test button | | | G2R-1-SNDI | G2R-2-SNDI |

Note: When ordering, add the rated coil voltage and "(S)" to the model number. Rated coil voltages are given in the coil ratings table.

Example: G2R-1-S DC12 (S) ——— New model
| Rated coil voltage

■ Accessories (Order Separately)

Connecting Sockets

| Applicable Relay model | Track/surface-mounting Socket | | Back-mounting Socket | |
|---------------------------------------|--|------------------------------|----------------------|-------------------|
| | Screwless clamp terminal | Screw terminal | Terminals | Model |
| 1 pole G2R-1-S(N)(D)(ND)(NI)(NDI) | • P2RF-05S (See note.) + (P2CM-S (option)) | • P2RF-05-E • P2RF-05 | PCB terminals | P2R-05P, P2R-057P |
| | | | Solder terminals | P2R-05A |
| 2 poles G2R-2-S(N)(D)(ND)(NI)(NDI) | • P2RF-08S (See note.) + (P2CM-S (option)) | • P2RF-08-E • P2RF-08 | PCB terminals | P2R-08P, P2R-087P |
| | | | Solder terminals | P2R-08A |

Note: Use of the P2CM Clip & Release Lever is recommended to ensure stable mounting.

Accessories for Screwless Clamp Terminal Socket (Option)

| Name | Model |
|----------------------|------------------------------------|
| Clip & Release Lever | P2CM-S |
| Nameplate | R99-11 Nameplate for MY |
| Socket Bridge | P2RM-SR (for AC), P2RM-SB (for DC) |

Mounting Tracks

| Applicable Socket | Description | | Model |
|--------------------------------|-------------------------|------------------------|-----------|
| Mounting track and accessories | Mounting track | 50 cm (l) x 7.3 mm (t) | PFP-50N |
| | | 1 m (l) x 7.3 mm (t) | PFP-100N |
| | | 1 m (l) x 16 mm (t) | PFP-100N2 |
| | End plate | | PFP-M |
| | Spacer | | PFP-S |
| Mounting plate | Back-connecting Sockets | | P2R-P* |

*Used to mount several P2R-05A and P2R-08A Connecting Sockets side by side.

Specifications

■ Coil Ratings

| | Rated voltage | Rated current* | | Coil resistance* | Coil inductance (H) (ref. value) | | Must operate voltage | Must release voltage | Max. voltage | Power consumption (approx.) |
|----|---------------|----------------|---------|------------------|-------------------------------------|-------------|----------------------|----------------------|--------------|-----------------------------|
| | | 50 Hz | 60 Hz | | Armature OFF | Armature ON | | | | |
| AC | 24 V | 43.5 mA | 37.4 mA | 253 Ω | 0.81 | 1.55 | 80% max. | 30% min. | 110% | 0.9 VA at 60 Hz |
| | 110 V | 9.5 mA | 8.2 mA | 5,566 Ω | 13.33 | 26.83 | | | | |
| | 120 V | 8.6 mA | 7.5 mA | 7,286 Ω | 16.13 | 32.46 | | | | |
| | 230 V | 4.4 mA | 3.8 mA | 27,172 Ω | 72.68 | 143.90 | | | | |
| | 240 V | 3.7 mA | 3.2 mA | 30,360 Ω | 90.58 | 182.34 | | | | |

| | Rated voltage | Rated current* | | Coil resistance* | Coil inductance (H) (ref. value) | | Must operate voltage | Must release voltage | Max. voltage | Power consumption (approx.) |
|----|---------------|----------------|-------|------------------|-------------------------------------|-------------|----------------------|----------------------|--------------|-----------------------------|
| | | 50 Hz | 60 Hz | | Armature OFF | Armature ON | | | | |
| DC | 6 V | 87.0 mA | | 69 Ω | 0.25 | 0.48 | 70% max. | 15% min. | 110% | 0.53 W |
| | 12 V | 43.2 mA | | 278 Ω | 0.98 | 2.35 | | | | |
| | 24 V | 21.6 mA | | 1,113 Ω | 3.60 | 8.25 | | | | |
| | 48 V | 11.4 mA | | 4,220 Ω | 15.2 | 29.82 | | | | |

* The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of ±10%.

■ Contact Ratings

| Number of poles | 1 pole | | 2 poles | |
|--------------------------|------------------------------------|--|----------------------------------|--|
| Load | Resistive load (cosφ = 1) | Inductive load (cosφ = 0.4; L/R = 7 ms) | Resistive load (cosφ = 1) | Inductive load (cosφ = 0.4; L/R = 7 ms) |
| Rated load | 10 A at 250 VAC; 10 A at 30 VDC | 7.5 A at 250 VAC; 5 A at 30 VDC | 5 A at 250 VAC; 5 A at 30 VDC | 2 A at 250 VAC; 3 A at 30 VDC |
| Rated carry current | 10 A | | 5 A | |
| Max. switching voltage | 440 VAC, 125 VDC | | 380 VAC, 125 VDC | |
| Max. switching current | 10 A | | 5 A | |
| Max. switching capacity | 2,500 VA, 300 W | 1,875 VA, 150 W | 1,250 VA, 150 W | 500 VA, 90 W |
| Minimum permissible load | 100 mA at 5 VDC | | 10 mA at 5 VDC | |

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

■ Characteristics

| Item | 1 pole | 2 poles |
|--------------------------|---|--|
| Contact resistance | 100 mΩ max. | |
| Operate (set) time | 15 ms max. | |
| Release (reset) time | AC: 10 ms max.; DC: 5 ms max. (w/built-in diode: 20 ms max.) | AC: 15 ms max.; DC: 10 ms max. (w/built-in diode: 20 ms max.) |
| Max. operating frequency | Mechanical: 18,000 operations/hr Electrical: 1,800 operations/hr (under rated load) | |
| Insulation resistance | 1,000 MΩ min. (at 500 VDC) | |
| Dielectric strength | 5,000 VAC, 50/60 Hz for 1 min between coil and contacts*; 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity | 5,000 VAC, 50/60 Hz for 1 min between coil and contacts*; 3,000 VAC, 50/60 Hz for 1 min between contacts of different polarity 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity |
| 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: 200 m/s ² when energized; 100 m/s ² when not energized | |
| Service life | Mechanical: AC coil: 10,000,000 operations min.; DC coil: 20,000,000 operations min. (at 18,000 operations/hr) Electrical: 100,000 operations min. (at 1,800 operations/hr under rated load) (DC coil type) | |
| Ambient temperature | Operating: -40°C to 70°C (with no icing or condensation) | |
| Ambient humidity | Operating: 5% to 85% | |
| Weight | Approx. 21 g | |

Note: Values in the above table are the initial values.

*4,000 VAC, 50/60 Hz for 1 minute when the P2R-05A or P2R-08A Socket is used.

■ Approved Standards

UL 508 (File No. E41643)

| Model | Contact form | Coil ratings | Contact ratings | Operations |
|---------|--------------|------------------------------|---|---------------------|
| G2R-1-S | SPDT | 5 to 110 VDC 5 to 240 VAC | 10 A, 30 VDC (resistive) 10 A, 250 VAC (general use) TV-3 (NO contact only) | 6 x 10 ³ |
| G2R-2-S | DPDT | | 5 A, 30 VDC (resistive) 5 A, 250 VAC (general use) TV-3 (NO contact only) | 6 x 10 ³ |

IEC/VDE (EN61810)

| Contact form | Coil ratings | Contact ratings | Operations |
|--------------|--|--|-----------------------|
| 1 pole | 6, 12, 24, 48 VDC 24, 110, 120, 230, 240 VAC | 5 A, 440 VAC (cosφ = 1.0) 10 A, 250 VAC (cosφ = 1.0) 10 A, 30 VDC (0 ms) | 100 x 10 ³ |
| 2 poles | | 5 A, 250 VAC (cosφ = 1.0) 5 A, 30 VDC (0 ms) | 100 x 10 ³ |

CSA 22.2 No.0, No.14

(File No. LR31928)

| Model | Contact form | Coil ratings | Contact ratings | Operations |
|---------|--------------|------------------------------|---|---------------------|
| G2R-1-S | SPDT | 5 to 110 VDC 5 to 240 VAC | 10 A, 30 VDC (resistive) 10 A, 250 VAC (general use) TV-3 (NO contact only) | 6 x 10 ³ |
| G2R-2-S | DPDT | | 5 A, 30 VDC (resistive) 5 A, 250 VAC (general use) TV-3 (NO contact only) | 6 x 10 ³ |

LR

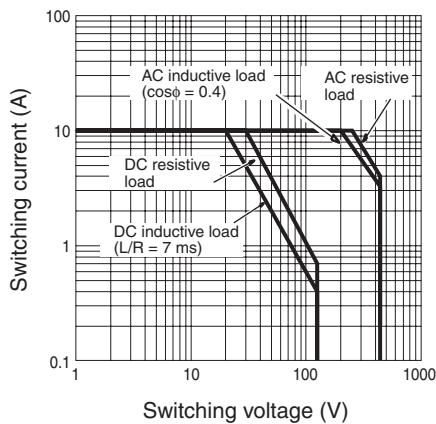
| Number of poles | Coil ratings | Contact ratings | Operations |
|-----------------|------------------------------|--|-----------------------|
| 1 pole | 5 to 110 VDC 5 to 240 VDC | 10 A, 250 VAC (general use) 7.5 A, 250 VAC (PF0.4) 10 A, 30 VDC (resistive) 5A, 30VDC (L/R=7ms) | 100 x 10 ³ |
| 2 poles | | 5 A, 250 VAC (general use) 2 A, 250 VAC (PF0.4) 5 A, 30 VDC (resistive) 3A, 30VDC (L/R=7ms) | 100 x 10 ³ |

Engineering Data

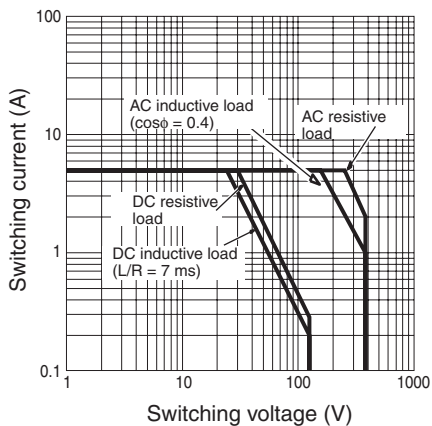
Maximum Switching Capacity

Plug-in Relays

G2R-1-S



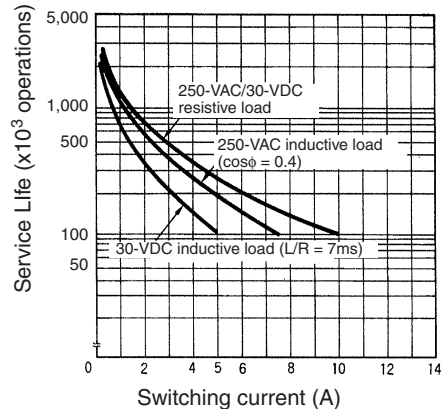
G2R-2-S



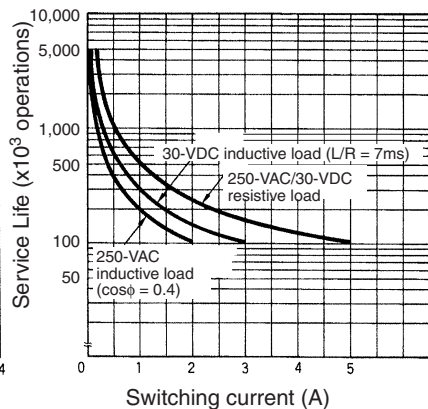
Electrical Service Life

Plug-in Relays

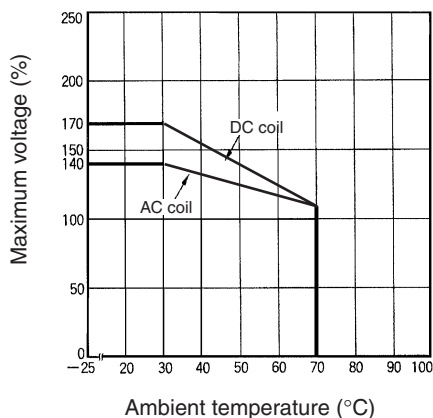
G2R-1-S



G2R-2-S



Ambient Temperature vs. Maximum Coil Voltage



Note: The maximum voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

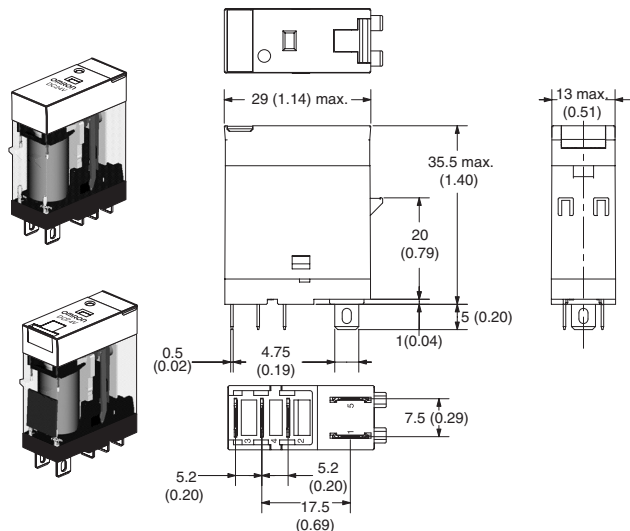
Dimensions

Unit: mm (inch)

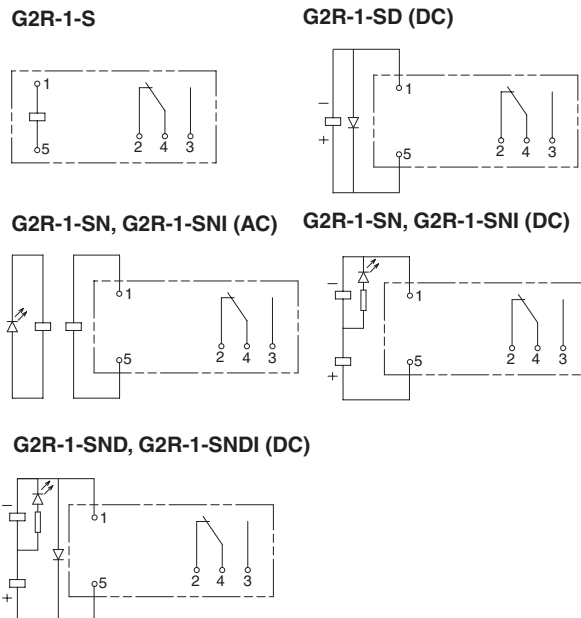
Relays with Plug-in Terminals

SPDT Relays

G2R-1-S, G2R-1-SN, G2R-1-SNI
G2R-1-SD, G2R-1-SND, G2R-1-SNDI

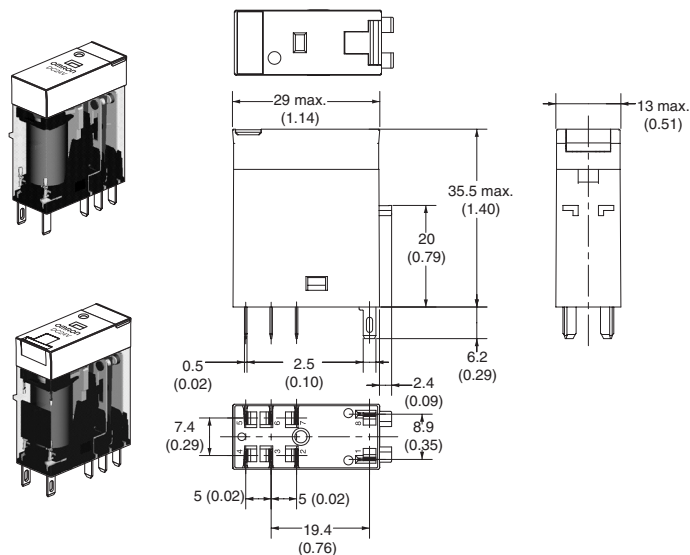


Terminal Arrangement/Internal Connections (Bottom View)

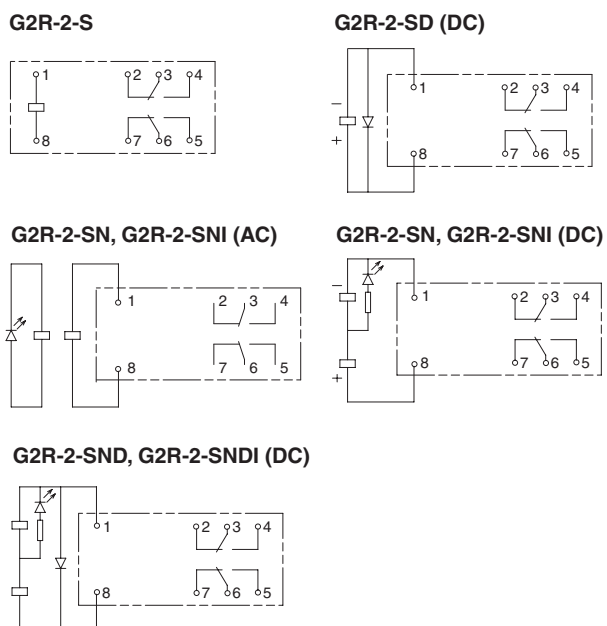


DPDT Relays

G2R-2-S, G2R-2-SN, G2R-2-SNI
G2R-2-SD, G2R-2-SND, G2R-2-SNDI

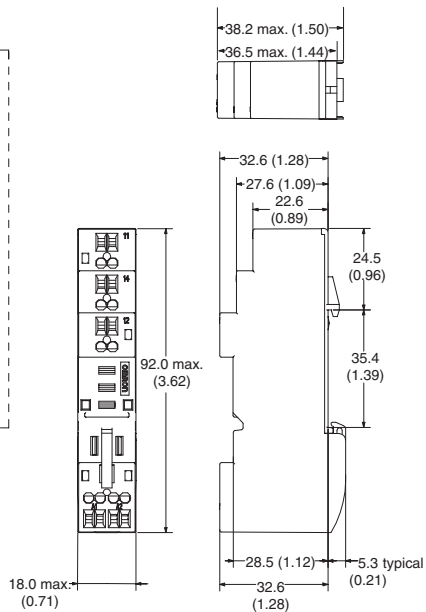
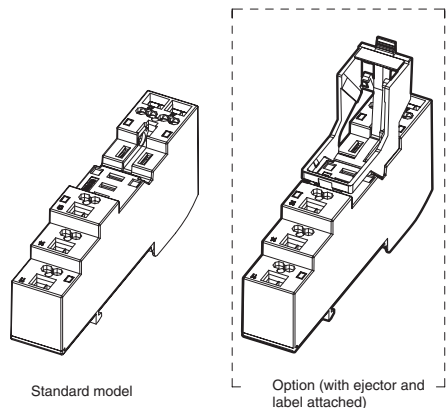


Terminal Arrangement/Internal Connections (Bottom View)

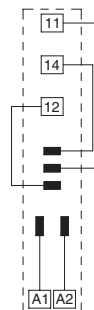


Track/Surface Mounting Sockets

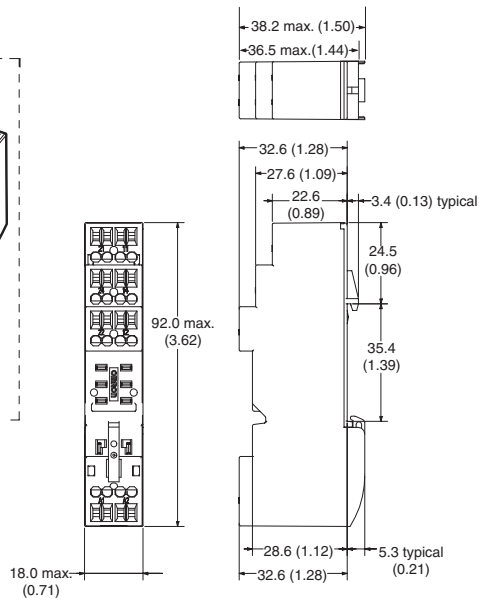
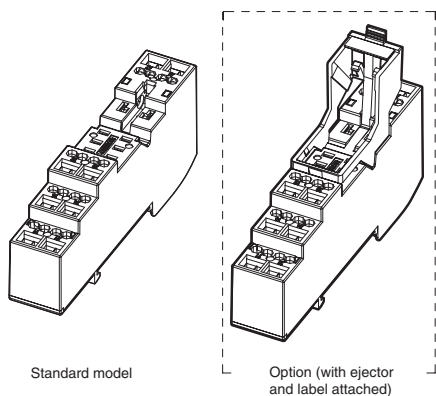
P2RF-05-S



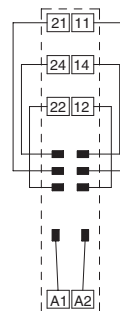
Terminal Arrangement (Top View)



P2RF-08-S

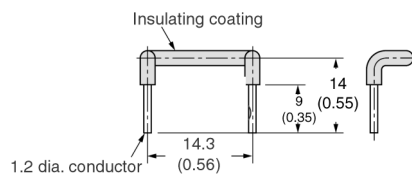


Terminal Arrangement (Top View)



Accessories for P2RF-□-S

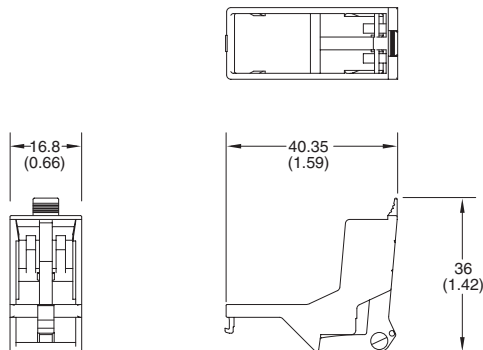
Socket Bridge



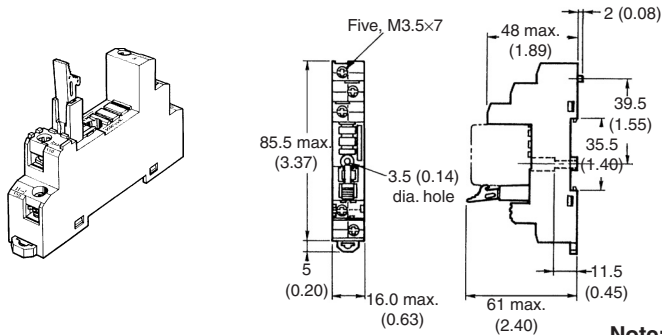
Note: The color of insulating coating indicates power type.

| Model | Power | Color |
|---------|-------|-------|
| P2RM-SR | AC | Red |
| P2RM-SB | DC | Blue |

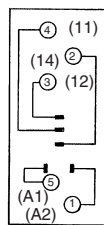
Clip and Release Lever



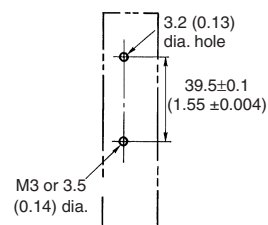
P2RF-05-E



Terminal Arrangement (Top View)

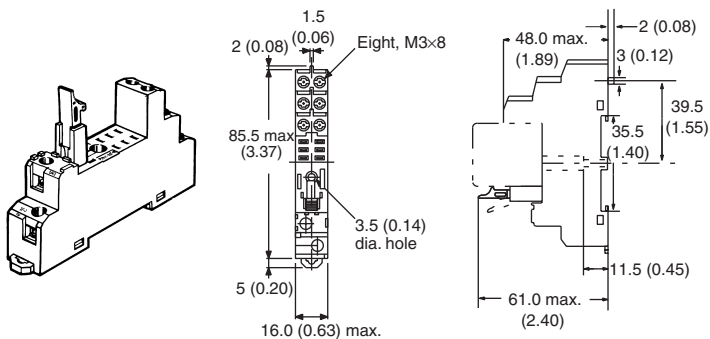


Mounting Holes (for Surface Mounting)

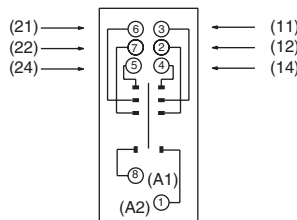


Note: Pin numbers in parentheses apply to DIN standard.

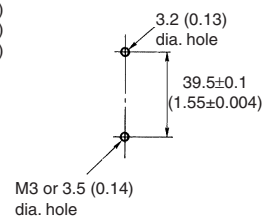
P2RF-08-E



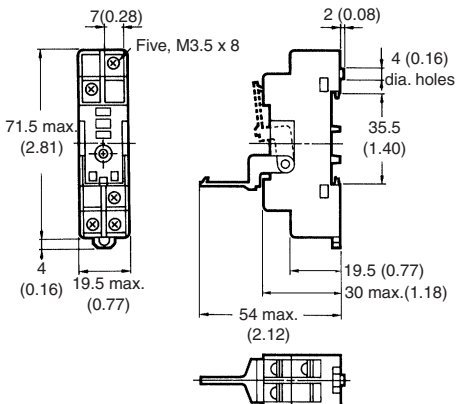
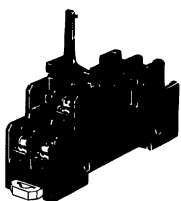
Terminal Arrangement (Top View)



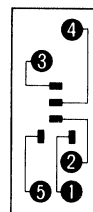
Mounting Holes (for Surface Mounting)



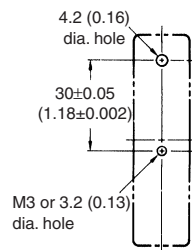
P2RF-05



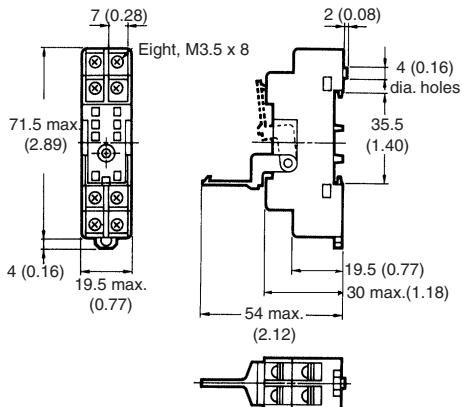
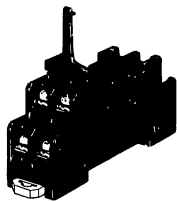
Terminal Arrangement (Top View)



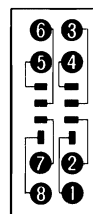
Mounting Holes (for Surface Mounting)



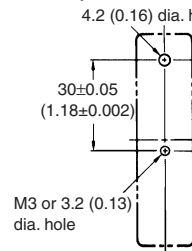
P2RF-08



Terminal Arrangement (Top View)

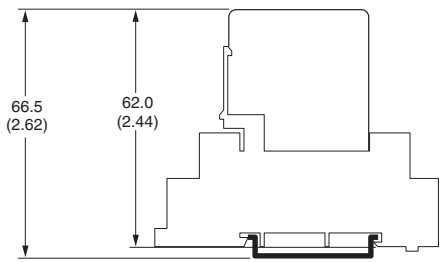


Mounting Holes (for Surface Mounting)

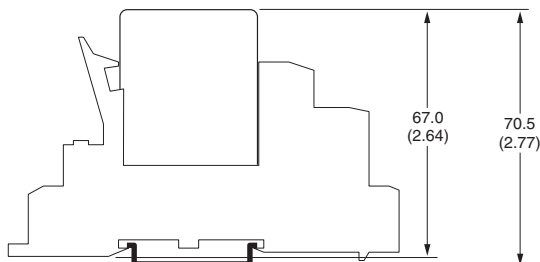


Mounting Height of Relay with Track/Surface Mounting Sockets

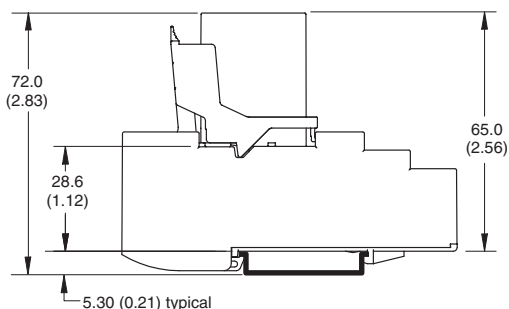
P2RF-□



P2RF-□-E

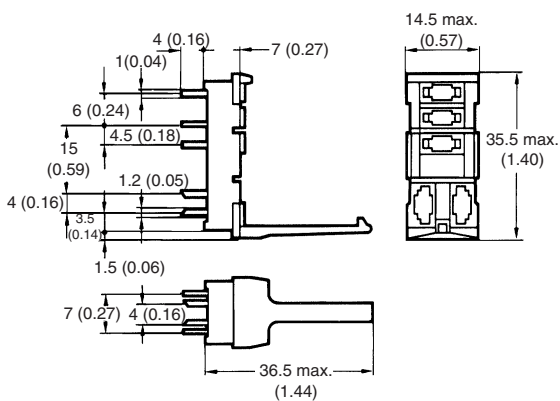
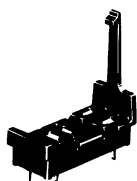


P2RF-□-S

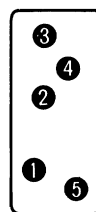


Back-connecting Sockets

P2R-05P (1-pole)

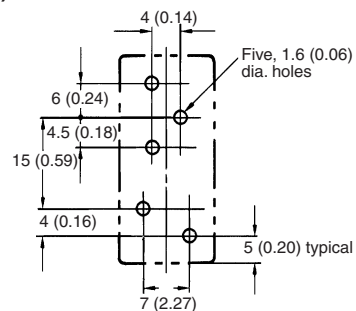


Terminal Arrangement (Bottom View)

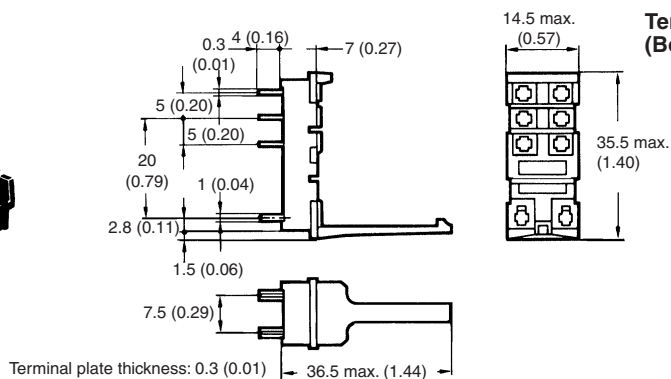
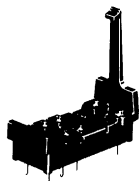


Mounting Holes

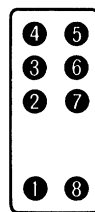
Tolerance: ±0.1



P2R-08P (2-pole)

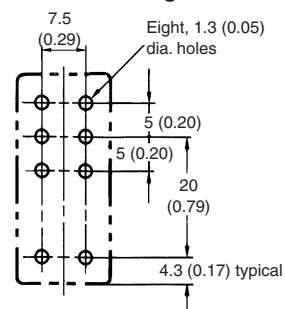


Terminal Arrangement (Bottom View)

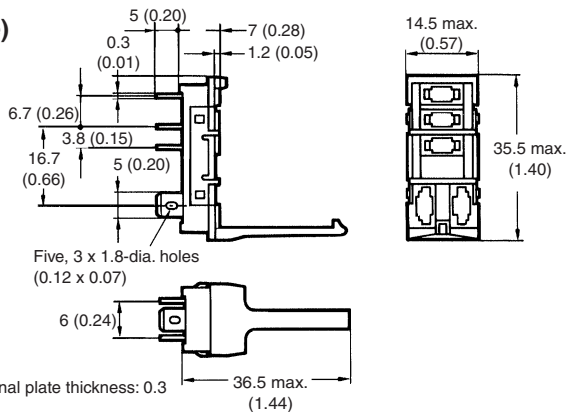
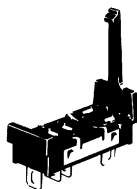


Mounting Holes

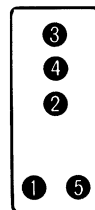
Eight, 1.3 (0.05) dia. holes



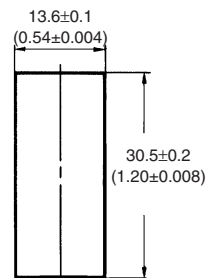
P2R-05A (1-pole)



Terminal Arrangement (Bottom View)

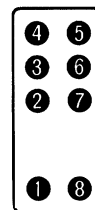
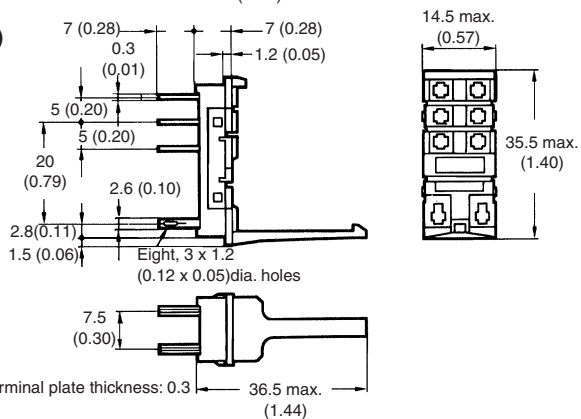
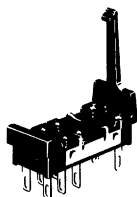


Panel Cutout

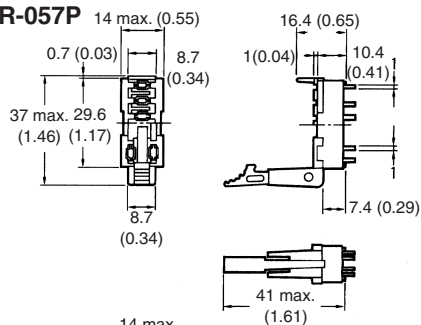


Recommended thickness of the panel is 1.6 to 2.0 mm

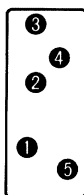
P2R-08A (2-pole)



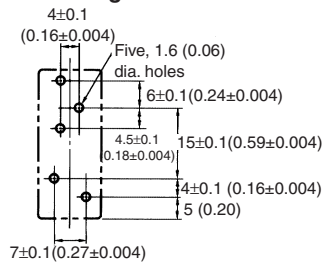
P2R-057P



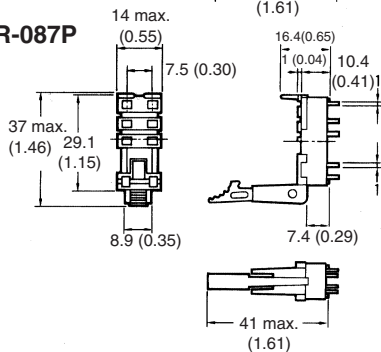
Terminal Arrangement (Bottom View)



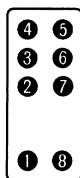
Mounting Holes



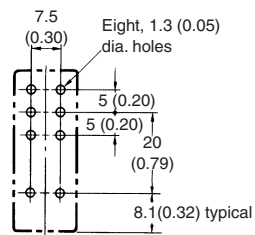
P2R-087P



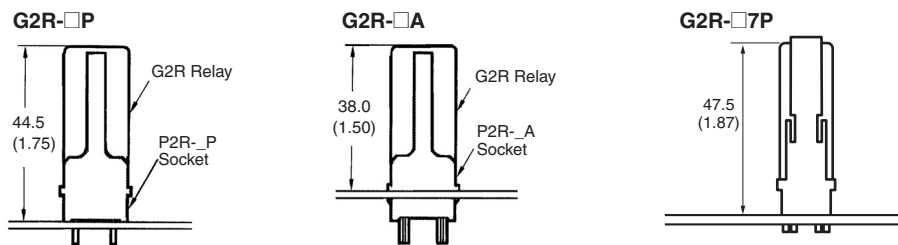
Terminal Arrangement (Bottom View)



Mounting Holes

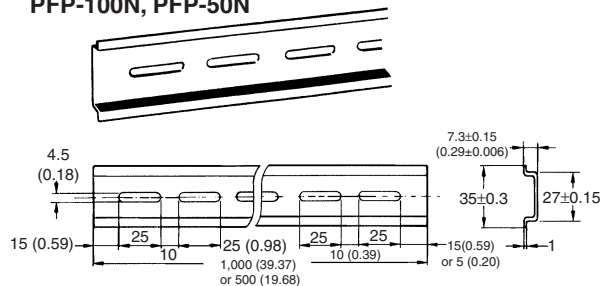


Mounting Height of Relay with Back-connecting Sockets

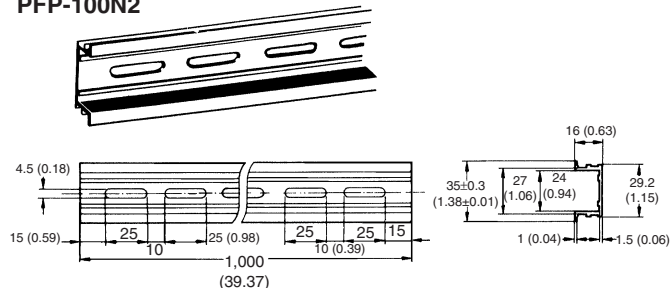


Mounting Tracks

PPF-100N, PPF-50N



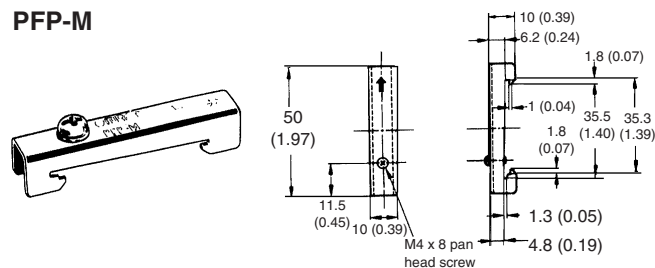
PPF-100N2



It is recommended to use a panel 1.6 to 2.0 mm thick.

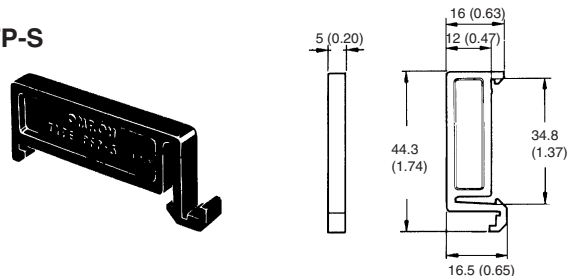
End Plate

PPF-M



Spacer

PPF-S



Precautions

⚠ Caution

Do not use the test button for any purpose other than testing. Be sure not to touch the test button accidentally as this will turn the contacts ON. Before using the test button, confirm that circuits, the load, and any other connected item will operate safely.

⚠ Caution

Check that the test button is released before turning ON relay circuits.

⚠ Caution

If the test button is pulled out too forcefully, it may bypass the momentary testing position and go straight into the locked position.

⚠ Caution

Use an insulated tool when you operate the test button.

Precautions for P2RF-□-S Connection

- Do not move the screwdriver up, down, or from side to side while it is inserted in the hole. Doing so may cause damage to internal components (e.g., deformation of the clamp spring or cracks in the housing) or cause deterioration of insulation.
- Do not insert the screwdriver at an angle. Doing so may break the side of the socket and result in a short-circuit.

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