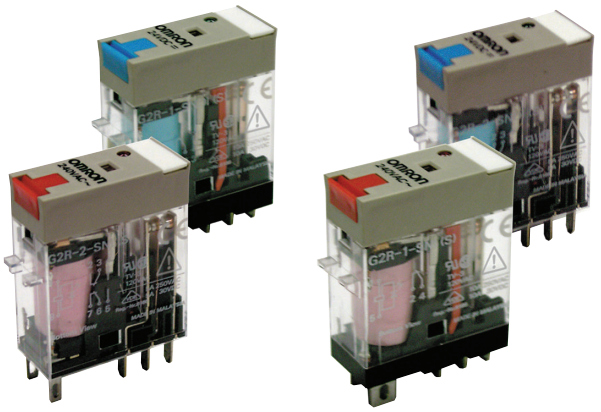
General-Purpose Relay

G2R-□-S (S)

J140I-E-02

Slim and Space-saving Power Plug-in Relay

- Reduces wiring work by 60% when combined with the P2RF-□-PU Push-In Plus Socket (according to actual OMRON measurements).
- Lockable test button models 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).



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Model Number Structure

Model Number Legend

G2R - □ - S □ □ (S)
1 2 3 4 5

1. **Number of Poles**
   1: 1 pole
   2: 2 poles
2. **Terminals**
   S: Plug-in
3. **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
4. **Rated Coil Voltage**
5. **Mechanical operation indicator and Nameplate**
   (S): Models with mechanical operation indicator and Nameplate

Note: Contact your OMRON representative for Relays with gold-plated contacts.

Ordering Information

When your order, specify the rated voltage.

List of Models

Classification	Coil ratings	Contact form	
		SPDT	DPDT
General-purpose	AC 24, 110, 120, 230, 240 DC 6, 12, 24, 48	**G2R-1-S (S)**	**G2R-2-S (S)**
LED indicator		**G2R-1-SN (S)**	**G2R-2-SN (S)**
LED indicator with test button		**G2R-1-SNI (S)**	**G2R-2-SNI (S)**
Diode	DC 6, 12, 24, 48	**G2R-1-SD (S)**	**G2R-2-SD (S)**
LED indicator and diode		**G2R-1-SND (S)**	**G2R-2-SND (S)**
LED indicator and diode with test button		**G2R-1-SNDI (S)**	**G2R-2-SNDI (S)**

Note: 1. The standard models are compliant with UL/CSA and VDE standards. Also, an EC compliance declaration has been made for combinations with the P2RF-□-E, P2RF-□-S and P2RF-□-PU. The Relays bear the CE Marking.

2. Refer to *Connecting Sockets*, below, for applicable Socket models.

3. 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 12 VDC (S)
└ Rated coil voltage

Accessories (Order Separately)

Connecting Sockets

Applicable Relay model		Track/surface-mounting Socket		Back-mounting Socket	
		Push-In Plus Terminal Blocks	Screw terminals *	PCB terminals	Solder terminals
No. of poles		Model	Models	Models	Model
1 pole	G2R-1-S (S)	P2RF-05-PU	P2RF-05 P2RF-05-E	P2R-05P P2R-057P	P2R-05A
2 poles	G2R-2-S (S)	P2RF-08-PU	P2RF-08 P2RF-08-E	P2R-08P P2R-087P	P2R-08A

* The structure of P2RF-□-E models provides finger protection. Round terminals cannot be used. Use forked crimp terminals.

Accessories for Push-In Plus Terminal Block Sockets (P2RF-□-PU)

Short Bars

Pitch	No. of poles	Colors	Model ✱	Minimum order (quantity)
7.75 mm	2	Red (R) Blue (S) Yellow (Y)	PYDN-7.75-020□	10
	3		PYDN-7.75-030□	
	4		PYDN-7.75-040□	
	20		PYDN-7.75-200□	
15.5 mm	8		PYDN-15.5-080□	

Note: Use the Short Bars for crossover wiring within one Socket or between Sockets.
* Replace the box (□) in the model number with the code for the covering color.

Labels

Model	Minimum order (sheet) (quantity per sheet)
XW5Z-P4.0LB1	5 1 sheet (60 pieces)

Mounting Tracks

Applicable Socket	Description		Model	Minimum order (quantity)
Track-connecting Socket	Mounting track	50 cm (ℓ) × 7.3 mm (t):	PFP-50N	---
		1 m (ℓ) × 7.3 mm (t):	PFP-100N	
		1 m (ℓ) × 16 mm (t):	PFP-100N2	
	End plate *1		PFP-M	10
	Spacer		PFP-S	
Back-connecting Socket	Mounting plate *2		P2R-P	1

*1. When mounting DIN rail, please use End Plate (PFP-M).
*2. 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	% of rated voltage			
AC	24 V	43.5 mA	37.4 mA	253 Ω	0.81	1.55	80% max.	30% max.	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.)
				Armature OFF	Armature ON	% of rated voltage			
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				

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for the AC rated current and ±10% for the DC coil resistance.
2. The AC coil resistance and inductance values are reference values only (at 60 Hz).
3. Operating characteristics were measured at a coil temperature of 23°C.
4. The maximum voltage is the maximum possible value of the voltage that can be applied to the relay coil. It is not the maximum voltage that can be applied continuously.

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 power	2,500 VA, 300 W	1,875 VA, 150 W	1,250 VA, 150 W	500 VA, 90 W
Failure rate (reference value) *	100 mA at 5 VDC		10 mA at 5 VDC	

Note: P level: λ_{60} = 0.1 x 10^{-6}/operation
*This value was measured at a switching frequency of 120 operations per minute.

Characteristics

Item	1 pole	2 poles
Contact configration	SPDT	
Contact structure	Single	
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	
Endurance	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)	
Ambient temperature	Operating: –40°C to 70°C (with no icing or condensation)	
Ambient humidity	Operating: 5% to 85%	
Weight	Approx. 20 g	

Note: Values in the above table are the initial values.
* These values are relay only. Prease refer to the “Products Related to Common Sockets and DIN Tracks Data Sheet” for connecting sockets.

Approved Standards

UL 508 (File No. E41643)

Model	Contact form	Coil ratings	Contact ratings	Operations
G2R-1-S (S)	SPDT	5 to 110 VDC 6 to 240 VAC	10 A, 30 VDC (resistive) 10 A, 250 VAC (general use)	100×10^3
			TV-3 (NO contact only)	25×10^3
G2R-2-S (S)	DPDT		5 A, 30 VDC (resistive) 5 A, 250 VAC (general use)	100×10^3
			TV-3 (NO contact only)	25×10^3

CSA 22.2 No.0, No.14 (File No. LR31928)

Model	Contact form	Coil ratings	Contact ratings	Operations
G2R-1-S (S)	SPDT	5 to 110 VDC 6 to 240 VAC	10 A, 30 VDC (resistive) 10 A, 250 VAC (general use)	100×10^3
			TV-3 (NO contact only)	25×10^3
G2R-2-S (S)	DPDT		5 A, 30 VDC (resistive) 5 A, 250 VAC (general use)	100×10^3
			TV-3 (NO contact only)	25×10^3

IEC/VDE (Certificate No. 40015012 EN 61810-1)

Contact form	Coil ratings	Contact ratings	Operations
1 pole	6, 12, 24, 48 VDC 24, 110, 120, 230, 240 VAC	5 A, 440 VAC ($\cos\phi$ = 1.0) 10 A, 250 VAC ($\cos\phi$ = 1.0) 10 A, 30 VDC (0 ms)	100×10^3
2 poles	6, 12, 24, 48 VDC 24, 110, 120, 230, 240 VAC	5 A, 250 VAC ($\cos\phi$ =1.0) 5 A, 30 VDC (0 ms)	100×10^3

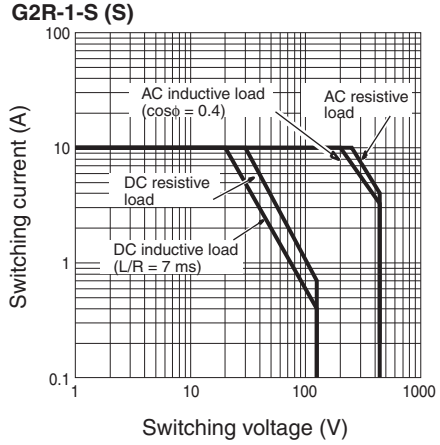
LR

Number of poles	Coil ratings	Contact ratings	Operations
1 pole	5 to 110 VDC 6 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)	100×10^3
2 poles	5 to 110 VDC 6 to 240 VDC	5 A, 250 VAC (general use) 2 A, 250 VAC (PF0.4) 5 A, 30 VDC (resistive) 3A, 30VDC (L/R=7ms)	100×10^3

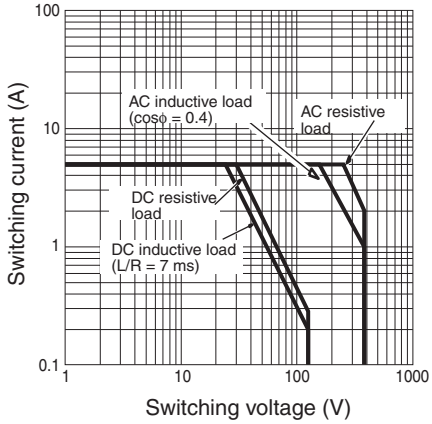
Engineering Data

Maximum Switching Power

G2R-1-S (S)

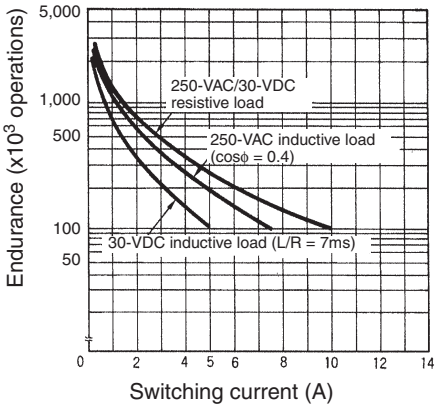


G2R-2-S (S)

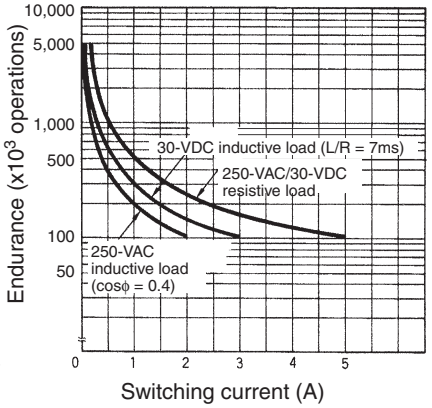


Endurance

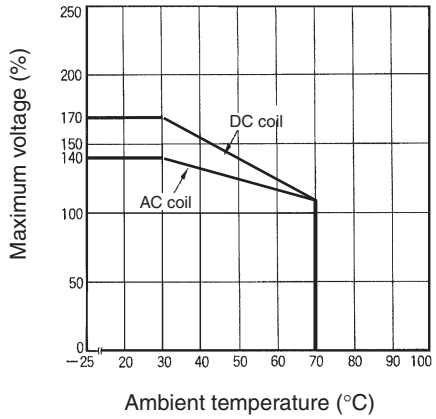
G2R-1-S (S)



G2R-2-S (S)



Ambient Temperature vs Maximum Coil Voltage



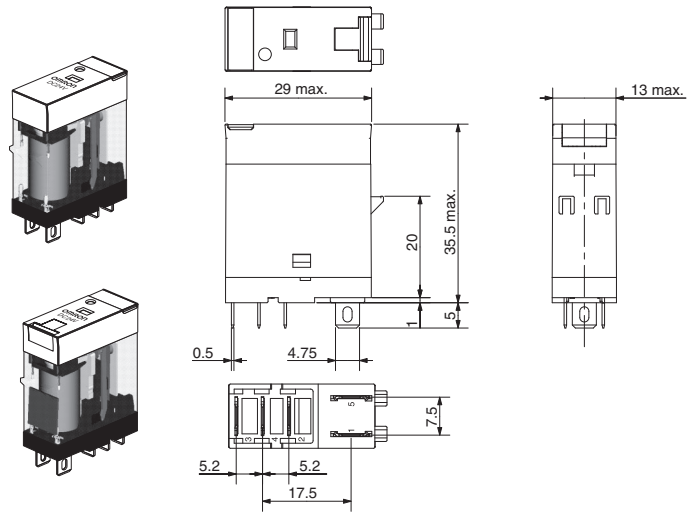
Dimensions

(Unit: mm)

Note: All units are in millimeters unless otherwise indicated.

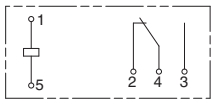
SPDT Relays

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

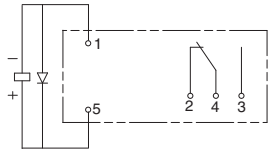


Terminal Arrangement/Internal Connections (Bottom View)

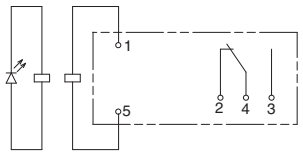
G2R-1-S (S)



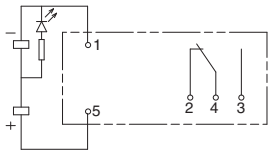
G2R-1-SD (S) (DC)



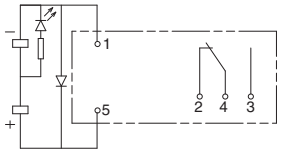
G2R-1-SN (S), G2R-1-SNI (S) (AC)



G2R-1-SN (S), G2R-1-SNI (S) (DC)

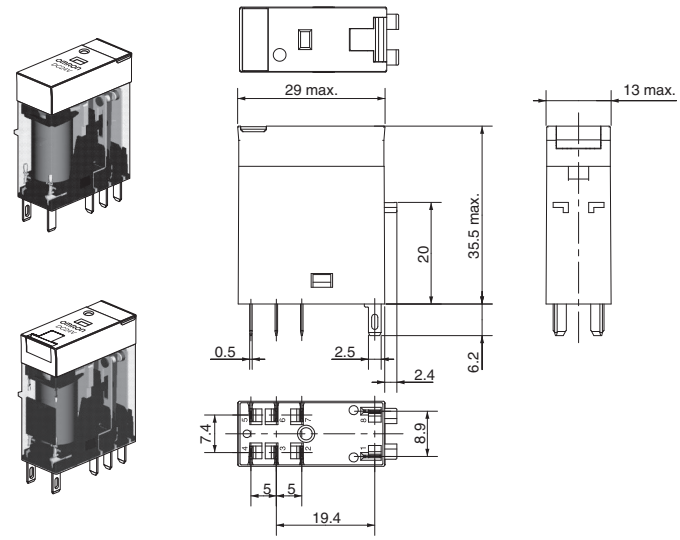


G2R-1-SND (S), G2R-1-SNDI (S) (DC)



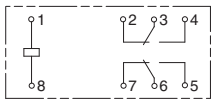
DPDT Relays

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

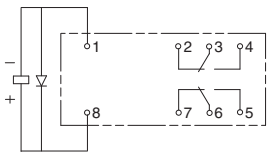


Terminal Arrangement/Internal Connections (Bottom View)

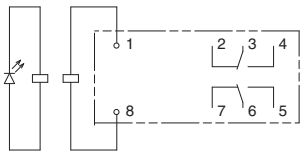
G2R-2-S (S)



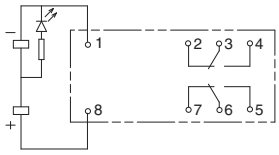
G2R-2-SD (S) (DC)



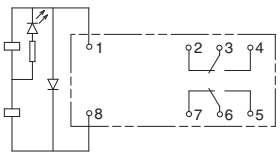
G2R-2-SN (S), G2R-2-SNI (S) (AC)



G2R-2-SN (S), G2R-2-SNI (S) (DC)

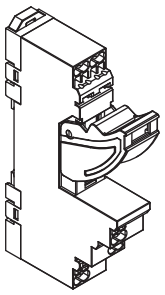


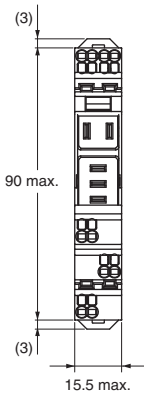
G2R-2-SND (S), G2R-2-SNDI (S) (DC)

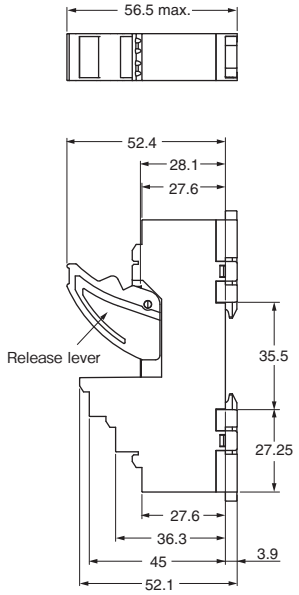


Track/Surface Mounting Sockets

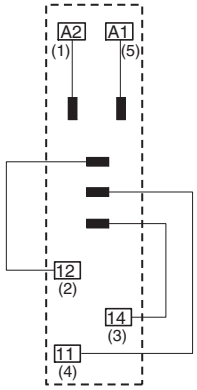
P2RF-05-PU





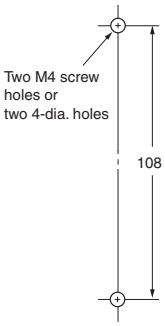


Terminal Arrangement/ Internal Connection Diagram (Top View)



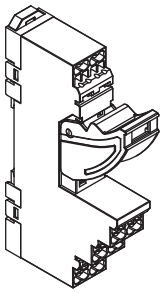
Note: The numbers in parentheses are traditionally used terminal numbers.

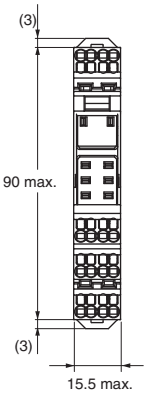
Mounting Hole Dimensions

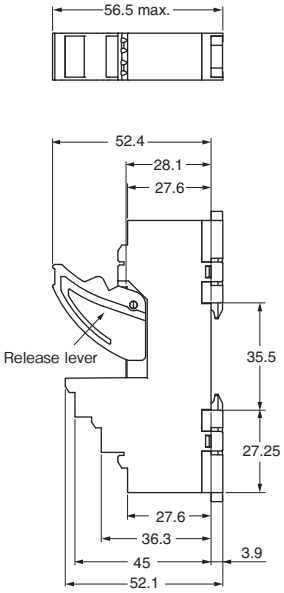


Note: Pull out the hooks to mount the Relay with screws.

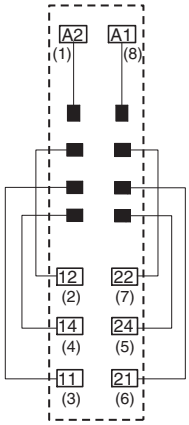
P2RF-08-PU





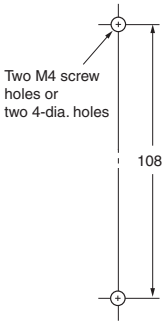


Terminal Arrangement/ Internal Connection Diagram (Top View)



Note: The numbers in parentheses are traditionally used terminal numbers.

Mounting Hole Dimensions

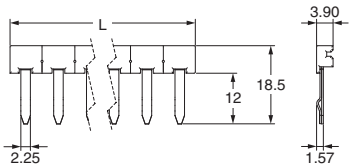


Note: Pull out the hooks to mount the Relay with screws.

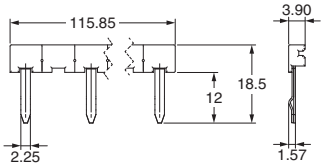
Accessories for P2RF-□-PU

Short Bars

PYDN-7.75-□□ (7.75 mm)



PYDN-15.5-080□ (15.5 mm)



Application	Pitch	No. of poles	L (Length)	Colors	Model *	Maximum carry current
For Contact terminals (common)	7.75 mm	2	15.1	Red (R) Blue (S) Yellow (Y)	PYDN-7.75-020□	20 A
		3	22.85		PYDN-7.75-030□	
		4	30.6		PYDN-7.75-040□	
		20	154.6		PYDN-7.75-200□	
For Coil terminals	15.5 mm	8	115.85		PYDN-15.5-080□	

* Replace the box (□) in the model number with the code for the covering color.

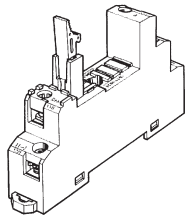
Note: 1. Use the Short Bars for crossover wiring within one Socket or between Sockets.

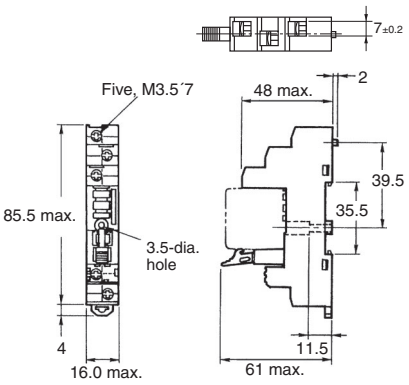
2. When using short bar to coil terminals of P2RF-□□-PU, A1 terminal cannot be used. In case crossover wiring of A1 terminal side is needed, crossover wiring using A1 terminals by wire is possible.

Short bar correspondence table

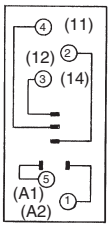
	Contact terminal (Common)	Coil terminal	
		A1	A2
P2RF-□□-PU	Available	---	❍

P2RF-05-E

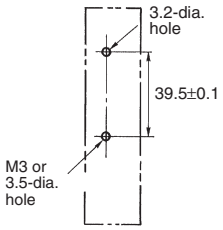




Terminal Arrangement (Top View)

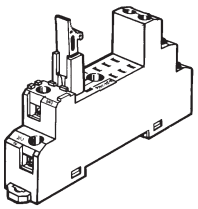


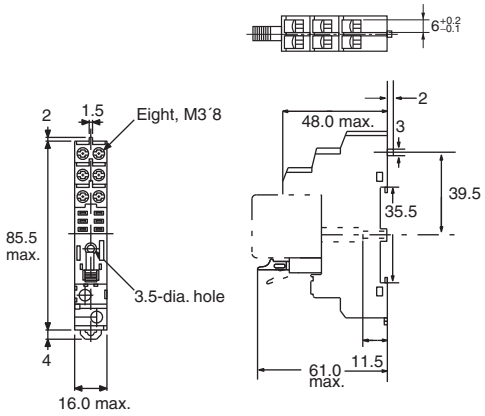
Mounting Holes (for Surface Mounting)



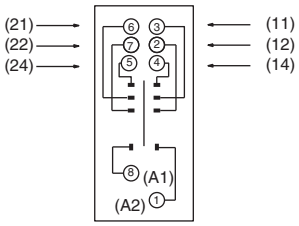
Note: Pin numbers in parentheses apply to DIN standard.

P2RF-08-E

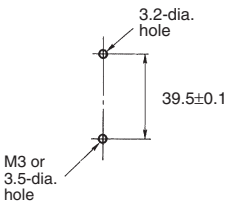




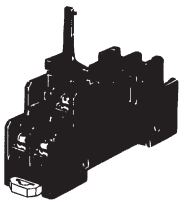
Terminal Arrangement (Top View)

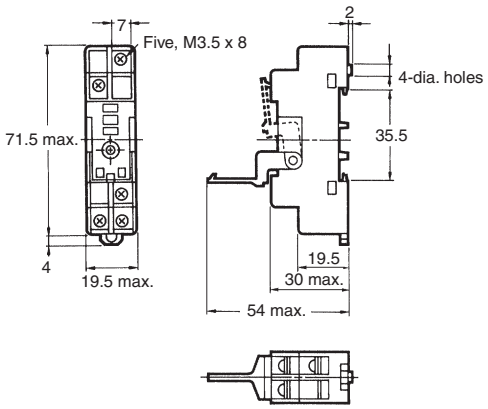


Mounting Holes (for Surface Mounting)

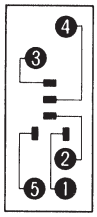


P2RF-05

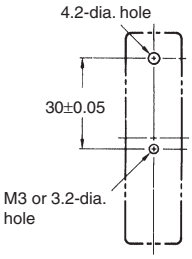




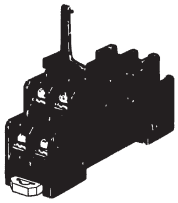
Terminal Arrangement (Top View)

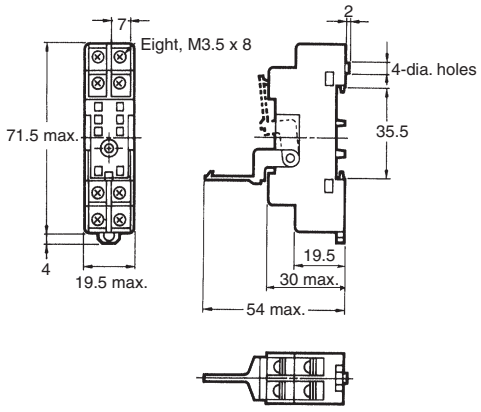


Mounting Holes (for Surface Mounting)

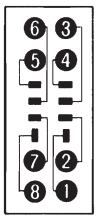


P2RF-08

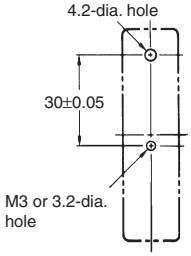




Terminal Arrangement (Top View)

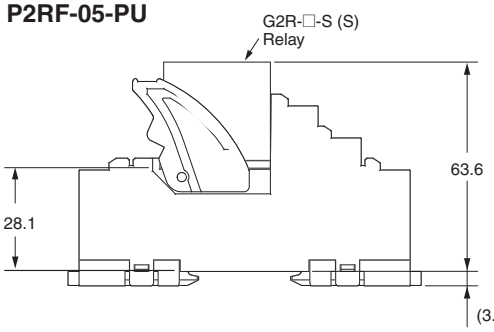


Mounting Holes (for Surface Mounting)

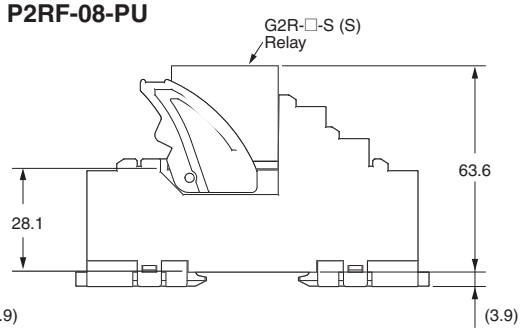


Mounting Height of Relay with Track/Surface Mounting Sockets

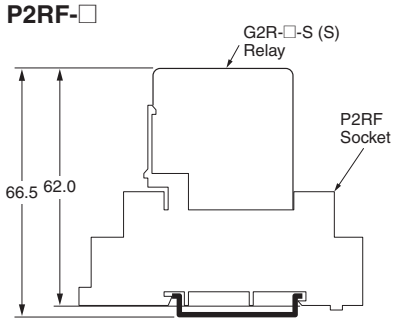
P2RF-05-PU



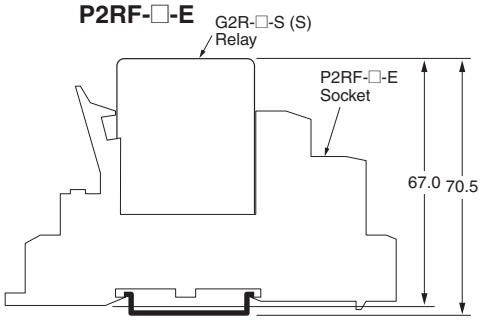
P2RF-08-PU



P2RF-□

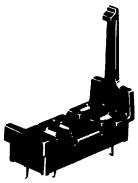


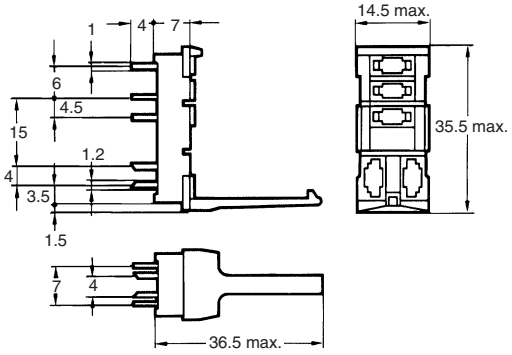
P2RF-□-E



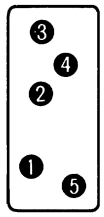
Back-connecting Sockets

P2R-05P (1-pole)



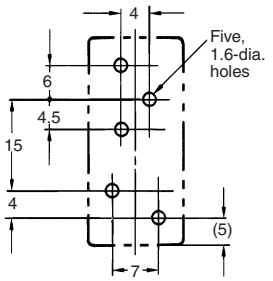


Terminal Arrangement (Bottom View)

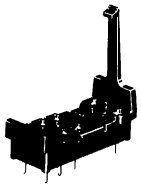


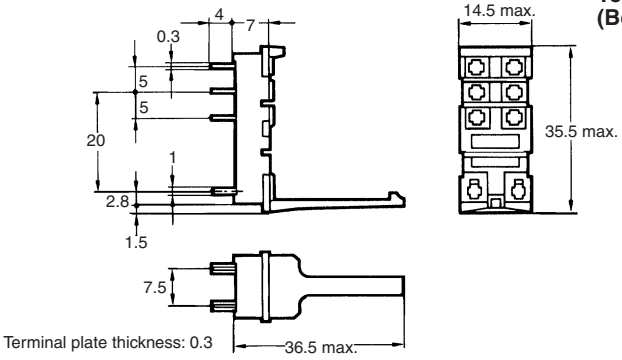
Mounting Holes

Tolerance: ±0.1

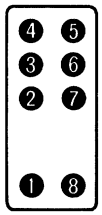


P2R-08P (2-pole)

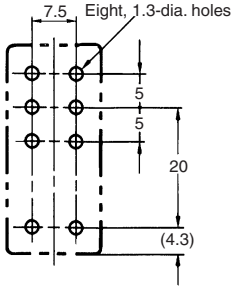




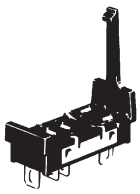
Terminal Arrangement (Bottom View)

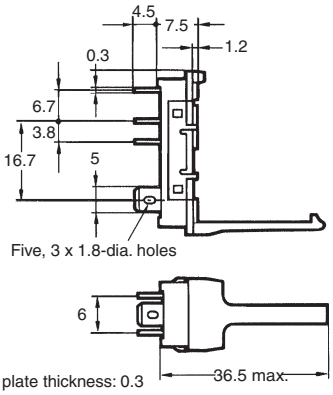


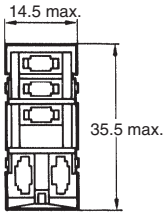
Mounting Holes



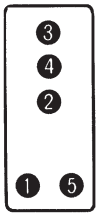
P2R-05A (1-pole)



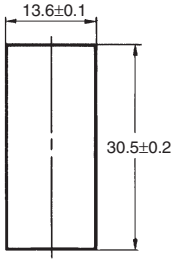




Terminal Arrangement (Bottom View)

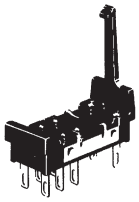


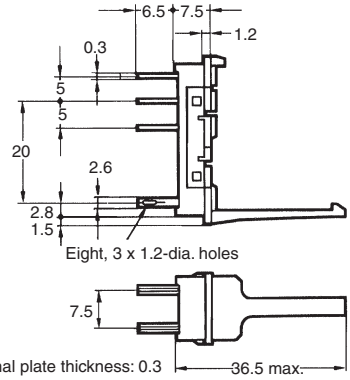
Panel Cutout

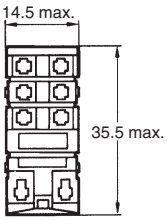


Recommended thickness of the panel is 1.6 to 2.0 mm

P2R-08A (2-pole)

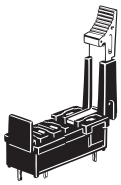


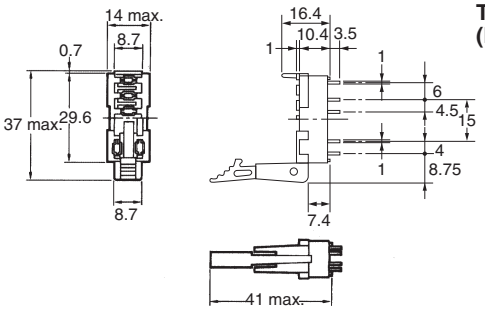




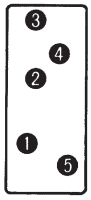
Recommended thickness of the panel is 1.6 to 2.0 mm

P2R-057P (1-pole)

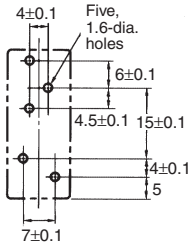




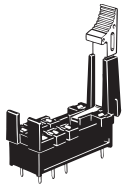
Terminal Arrangement (Bottom View)

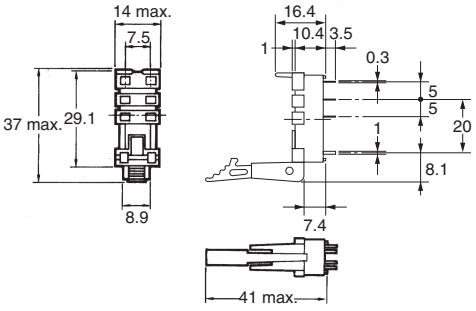


Mounting Holes



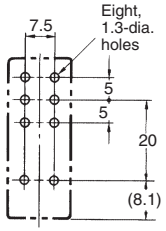
P2R-087P (2-pole)





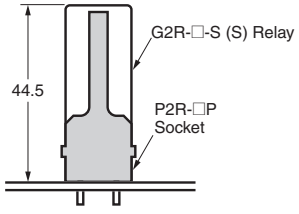
Terminal Arrangement (Bottom View)

Mounting Holes

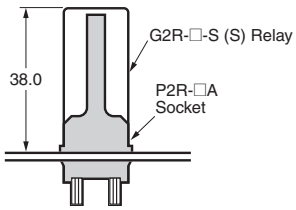


Mounting Height of Relay with Back-connecting Sockets

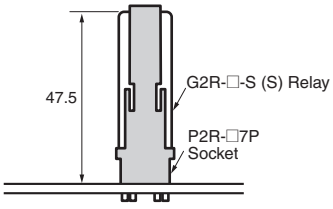
P2R-□P



P2R-□A

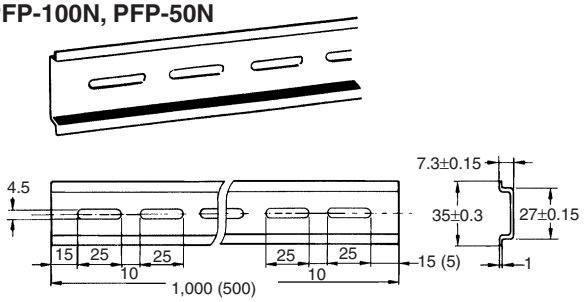


P2R-□7P

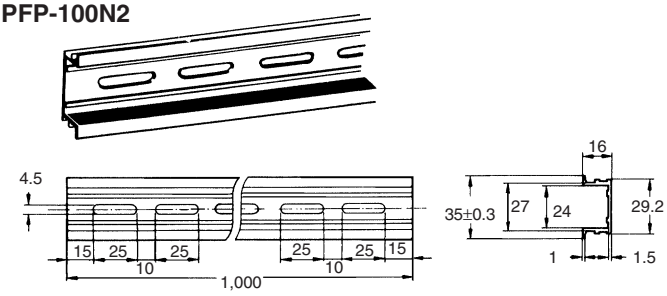


Mounting Tracks

PFP-100N, PFP-50N



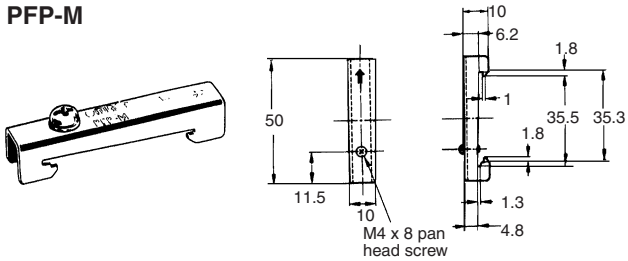
PFP-100N2



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

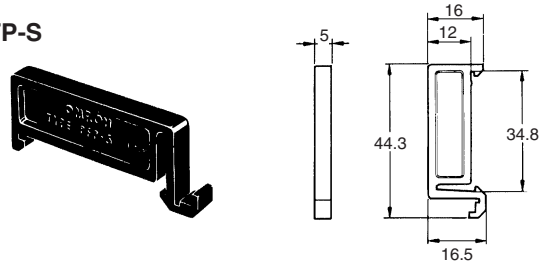
End Plate

PFP-M



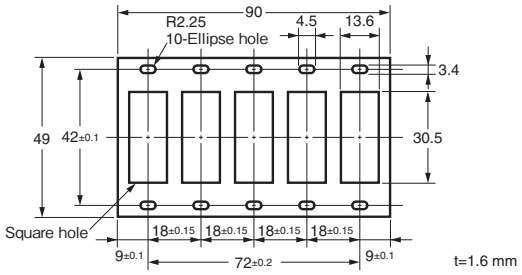
Spacer

PFP-S



Mounting Plate

P2R-P



Safety Precautions

Be sure to read the *Common Precautions for All Relay* in the website at the following URL: http://www.ia.omron.com/.
Refer to *Products Related to Common Sockets and DIN Tracks* for precautions on the applicable Sockets.
Refer to *PYF-□□-PU/P2RF-□□-PU* for precautions on Push-In Plus Terminal Block Sockets.

Warning Indications

⚠ CAUTION	**Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.**

⚠ Cation

- 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.
- Check that the test button is released before turning ON relay circuits.
- If the test button is pulled out too forcefully, it may bypass the momentary testing position and go straight into the locked position.
- Use an insulated tool when you operate the test button.

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