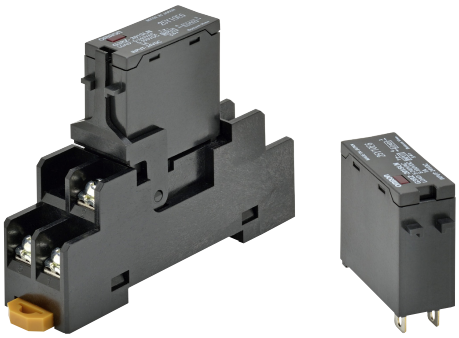
Power MOS FET Relays
G3RZ

CSM_G3RZ_DS_E_4_5

Power MOS FET Relays with the Same Shape as the G2R for Both AC and DC, Capable of 1 A Load Switching

- Reduces wiring work by 60% when combined with the P2RF-05-PU Push-In Plus Socket (according to actual OMRON measurements).
- Capable of switching 1-A load at 240 VAC or 100 VDC.
- Maximum leakage current of 10 μA for OFF output.
- Withstand voltage 2,500 VAC between inputs and outputs.
- Built-in input resistance and overvoltage absorption circuit.
- Capable of AC full-wave rectification and half-wave rectification load operation.

RoHS Compliant



Note: The socket is optional.

⚠ Refer to ***Safety Precautions for All Solid State Relays.***

Model Number Legend

G3RZ - □□□□□□

1 2 3 4 5

1. Load voltage
2: Load voltage: 240 VAC, 100 VDC

2. Load Current
01: Load current: 1 A

3. Terminal Shape
S: Plug-in terminals

4. Zero cross function
L: No zero cross function

5. Operation Indicator
N: With operation indicator

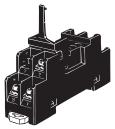
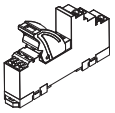
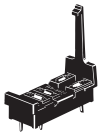
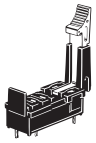
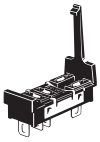
Ordering Information

List of Models

Insulation method	Zero cross function	Operation Indicator	Applied output load	Input rated voltage	Model
Photovoltaic coupler	No	Yes	1.0 A, 5 to 240 VAC, or 5 to 100 VDC	5 VDC	**G3RZ-201SLN DC5**
				12 VDC	**G3RZ-201SLN DC12**
				24 VDC	**G3RZ-201SLN DC24**

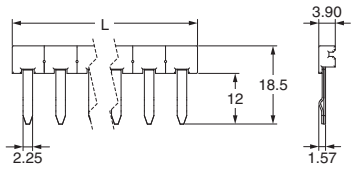
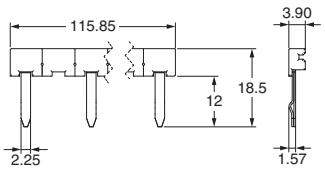
Accessories (Order Separately)

Connection Sockets

Classification	Terminal type	Appearance	Model
Front-mounting	Screw terminals		**P2RFZ-05**
			**P2RF-05**
	Screw terminals (finger protection structure)		**P2RFZ-05-E**
	Push-In Plus terminal blocks		**P2RF-05-PU**
Back-mounting	Relays with PCB Terminals		**P2R-05P**
			**P2R-057P**
	Solder terminals		**P2R-05A**

For Push-In Plus Terminal Block Sockets

Short Bars

Applicable sockets	Pitch	Application	Shape/external dimensions	Number of poles	L (Length)	Insulation color	Short Bars Model*1
P2RF-05-PU	7.75 mm	Bridging contact terminals (common)		2	15.1	Red (R) Blue (S) Yellow(Y)	PYDN-7.75-020□
				3	22.85		PYDN-7.75-030□
				4	30.6		PYDN-7.75-040□
				20	154.6		PYDN-7.75-200□
	15.5 mm	For Coil terminals		8	115.55		PYDN-15.5-080□

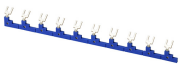
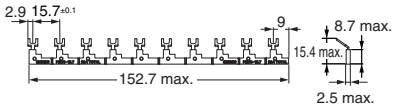
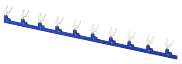
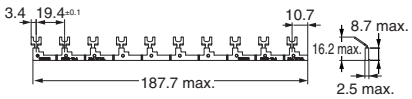
*1. Replace the box (□) in the model number with the code for the covering color. □Color selection: R = Red, S = Blue, Y = Yellow

Labels

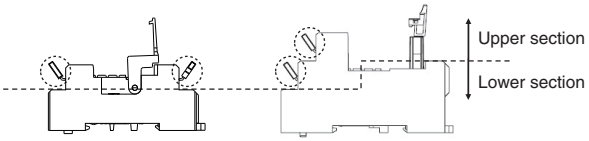
Applicable sockets	Model
P2RF-05-PU	XW5Z-P4.0LB1 (1 sheet/60 pieces)

For Screw Terminal Sockets

Short Bars

Applicable sockets	Pitch	Appearance	Dimensions (mm)	Number of poles	Insulation color	Short Bars Model	Maximum carry current	Minimum order (set)
P2RFZ-05-E	15.7 mm			10	Blue(S)	P2DN-15.7-100S	20 A	1
P2RFZ-05	19.4 mm			10	Blue(S)	P2DN-19.4-100S	20 A	1

Note: 1. Select an applicable type of short bars by checking applicable socket type, appearance, and dimensions.
2. Use the Short Bars for crossover wiring within one Socket or between Sockets.
3. Cannot be used on the P2RF-05.
4. Use the short bars on the lower section of the socket.
When using the short bars on the upper section of the socket, insert them so that their heads are pointed upwards (see the figure below). Otherwise, short bars may interfere with the socket, leading to improper wiring and contact failure.

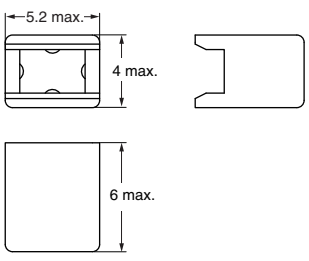


P2RFZ Series P2RFZ-E Series

✻One set (order unit) contains 10 short bars and 20 caps.

Accessories for Short Bars (P2DN)

Cap

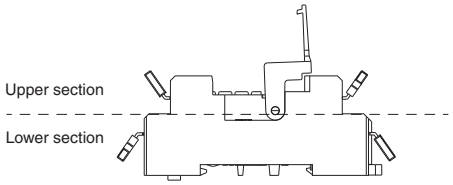
Short Bars Models	Appearance	Dimensions (mm)	Model
P2DN-19.4-100S P2DN-15.7-100S			P2DN-CP100

For Screw Terminal Sockets (P2RFZ-05)

Terminal covers

Applicable sockets	Appearance	Model	Minimum order (set)
P2RFZ-05		**P2CZ-C**	

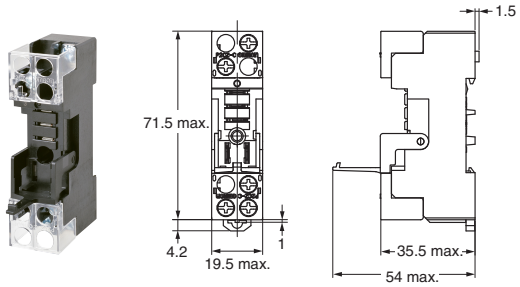
Note: 1. These covers cannot be used for P2RF-05.
2. Use these covers in a combination with P2RFZ-05.
3. Do not install short bars (optional) on the upper section (see the figure below).
Short bars may interfere with the terminal cover, making the terminal cover unusable.



P2RFZ Series

Dimensions with terminal cover

P2RFZ-05

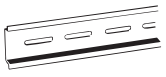
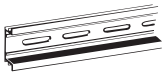


Labels

Applicable sockets	Model	Minimum order (sheet) (quantity per sheet)
P2RFZ-05-E	**XW5Z-P2.5LB1**	5 1 sheet (72 pieces)

Note: This label cannot be applied on sockets other than P2RFZ-05-E.

DIN Track Mounting Parts

Classification	Type		Appearance	Model
For front-mounting	DIN Tracks	Shallow type, total length: 1 m		**PFP-100N**
		Shallow type, total length: 0.5 m		**PFP-50N**
		Deep type, total length: 1 m		**PFP-100N2**
	End Plate			**PFP-M**
	Spacer			**PFP-S**
For back-mounting	Mounting Plates for Sockets ✻ (For 5 Sockets)		---	**P2R-P**

✻ Used to mount several P2R-05A Connecting Sockets side by side.

Ratings and Specifications

Ratings

Item / Model	Input					Output			
	Rated voltage	Operating voltage	Impedance	Voltage level		Rated load voltage	Load voltage range	Load current✻	Surge withstand current
				Must-operate voltage	Must-release voltage				
G3RZ-201SLN	5 VDC	4 to 6 VDC	400 Ω ±20%	4 VDC max.	1 VDC min.	5 to 240 VAC 5 to 100 VDC	3 to 264 VAC 3 to 125 VDC	100 μA to 1.0 A	10 A (10 ms)
	12 VDC	9.6 to 14.4 VDC	1.1 kΩ ±20%	9.6 VDC max.					
	24 VDC	19.2 to 28.8 VDC	2.2 kΩ ±20%	19.2 VDC max.					

✻ Depends on the ambient temperature. Refer to the reference data *Load Current vs. Ambient Temperature Rating* on page 5 for details.

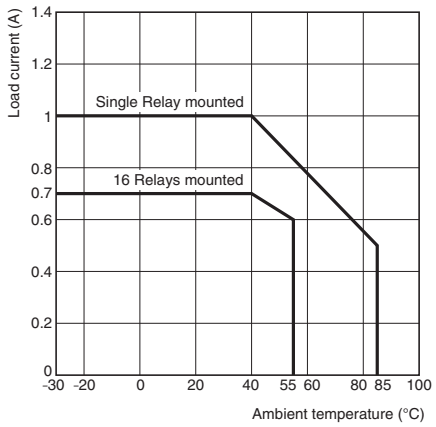
Characteristics

Operation time	6 ms max.
Release time	10 ms max.
Output ON resistance	2.4 Ω max.
OFF leakage current	10 μA max. (at 125 VDC) 100 μA max. (at 200 VAC)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength	2,500 VAC at 50/60 Hz for 1 min. between inputs and outputs
Vibration resistance	10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)
Shock resistance	1,000 m/s^2
Storage temperature	–30 to 100°C (with no icing or condensation)
Ambient operating temperature	–30 to 85°C (with no icing or condensation)
Ambient operating humidity	45% to 85% RH
Weight	Approx. 20 g

Engineering Data

Load Current vs. Ambient Temperature Rating

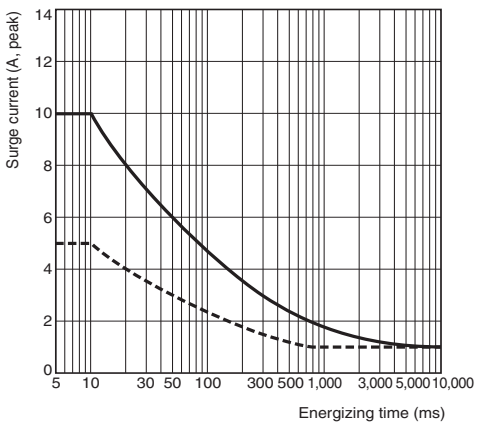
G3RZ-201SLN



Surge withstand current

Non-repetitive (If repetitive, keep the inrush current below the dotted line.)

G3RZ-201SLN

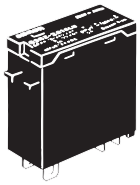


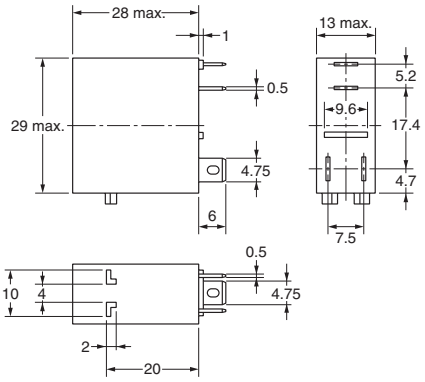
Dimensions

(Unit: mm)

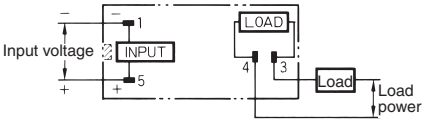
Relay

G3RZ-201SLN





Terminal Arrangement/Internal Connections (Bottom View)



Accessories (Order Separately)

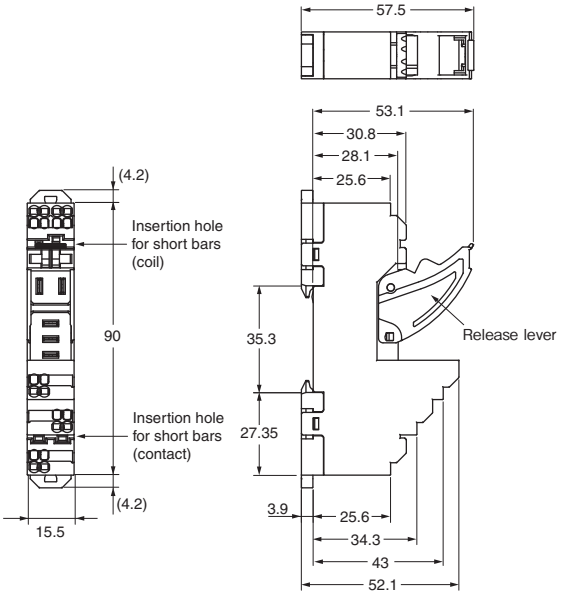
Socket Characteristics

Model	Rated carry current	Dielectric strength	Insulation resistance ✻	Remarks
P2RF-05-PU	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between coil and contact terminals: 4,000 VAC for 1 min	1,000 MΩ min.	
P2RFZ-05(-E)	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between coil and contact terminals: 4,000 VAC for 1 min	1,000 MΩ min.	
P2RF-05	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between coil and contact terminals: 4,000 VAC for 1 min	1,000 MΩ min.	
P2R-05P	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between coil and contact terminals: 4,000 VAC for 1 min	1,000 MΩ min.	
P2R-057P	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between coil and contact terminals: 5,000 VAC for 1 min	1,000 MΩ min.	
P2R-05A	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min Between ground terminals: 1,500 VAC for 1 min Between coil and contact terminals: 4,000 VAC for 1 min	1,000 MΩ min.	

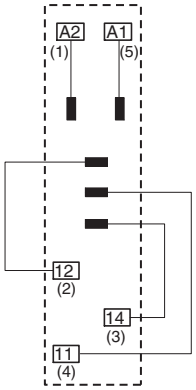
✻ The insulation resistance was measured with a 500-VDC insulation resistance meter at the same places as those used for measuring the dielectric strength.

Track/Surface Mounting Sockets

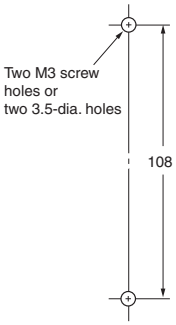
P2RF-05-PU



Terminal Arrangement/ Internal Connection Diagram (Top View)



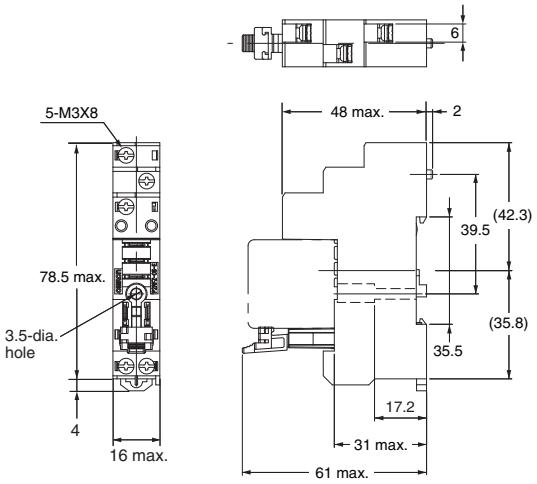
Mounting Hole Dimensions



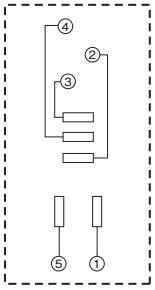
Note: 1. The numbers in parentheses are traditionally used terminal numbers.
2. Insert the short bar into only the A1 or A2 side.

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

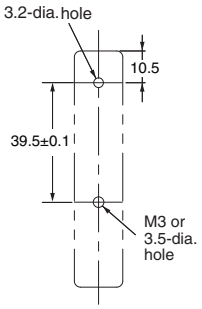
P2RFZ-05-E



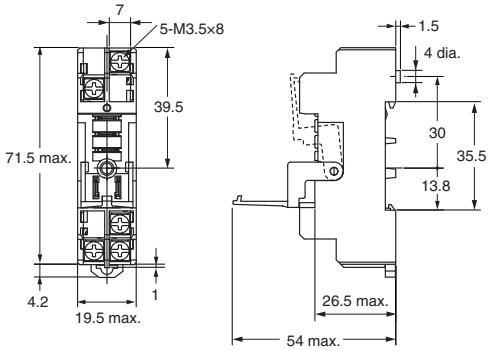
Terminal Arrangement/ Internal Connection Diagram (Top View)



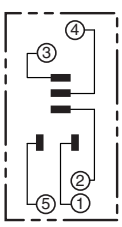
Mounting Hole Dimensions



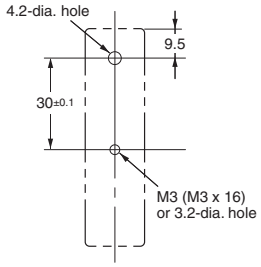
P2RFZ-05



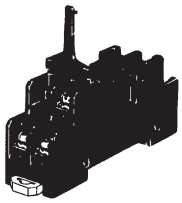
Terminal Arrangement/ Internal Connection Diagram (Top View)

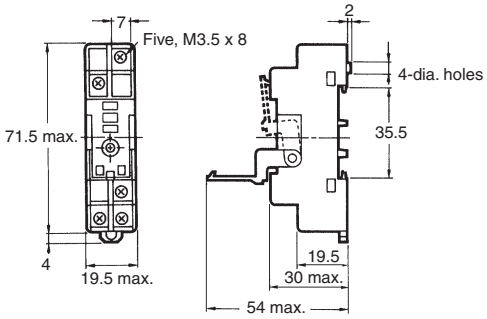


Mounting Hole Dimensions

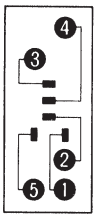


P2RF-05

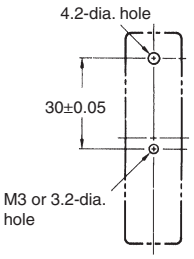




Terminal Arrangement (Top View)

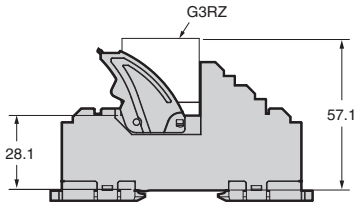


Mounting Holes (for Surface Mounting)

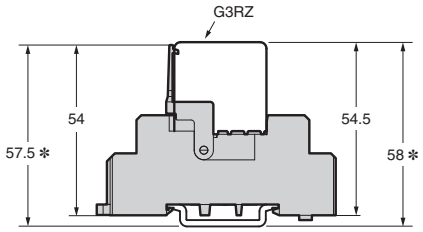


Mounting Height of Relay with Track/Surface Mounting Sockets

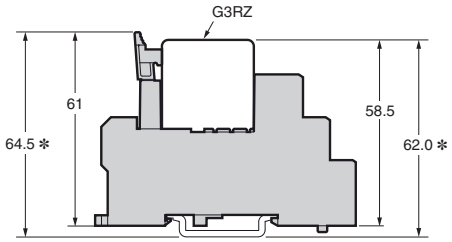
P2RF-05-PU



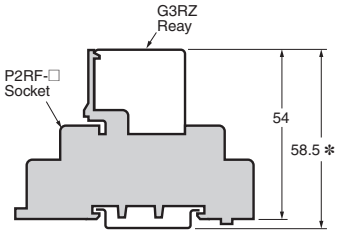
P2RFZ-05



P2RFZ-05-E



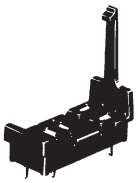
P2RF-05

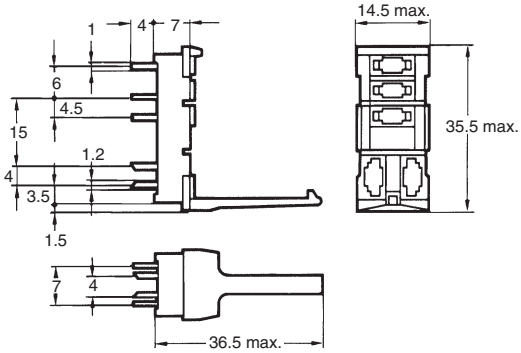


✻ These are values when using the DIN track PFP-□N.
Heights become higher by approximately 9 mm when using PFP-□N2.

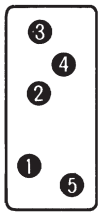
Back-connecting Sockets

P2R-05P (1-pole)

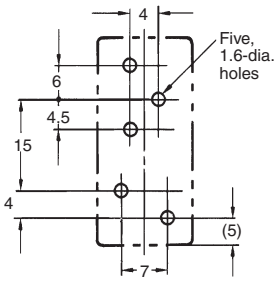




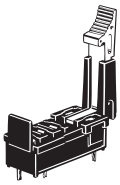
Terminal Arrangement (Bottom View)

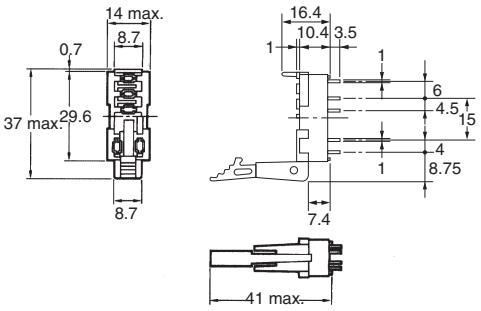


Mounting Holes (Bottom View)

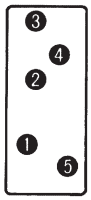


P2R-057P (1-pole)

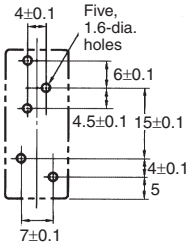




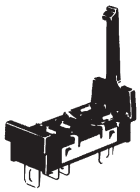
Terminal Arrangement (Bottom View)

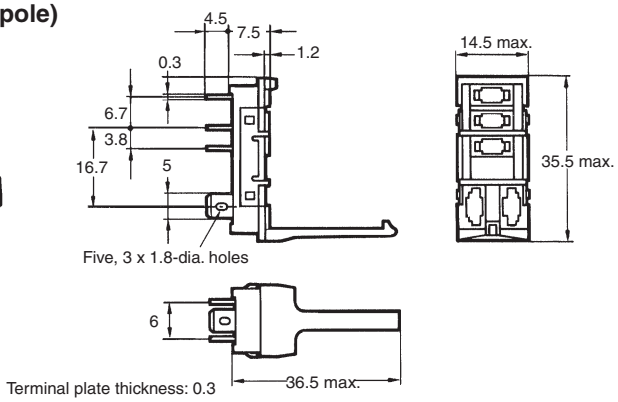


Mounting Holes (Bottom View)

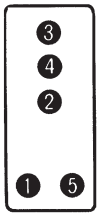


P2R-05A (1-pole)

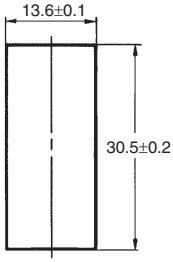




Terminal Arrangement (Bottom View)



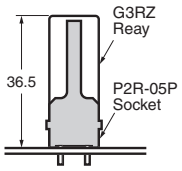
Panel Cutout (Bottom View)



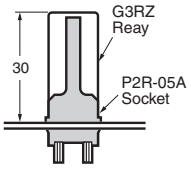
Recommended thickness of the panel is 1.6 to 2.0 mm

Mounting Height of Relay with Back-connecting Sockets

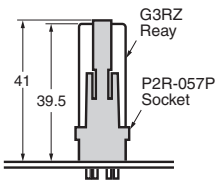
P2R-05P



P2R-05-A

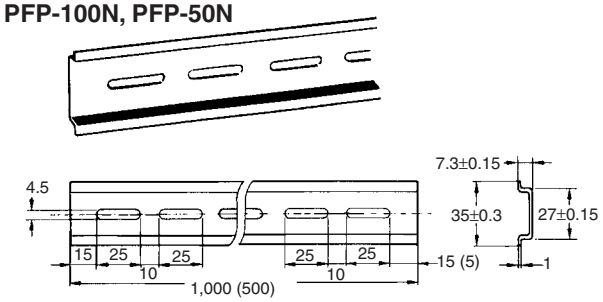


P2R-057P

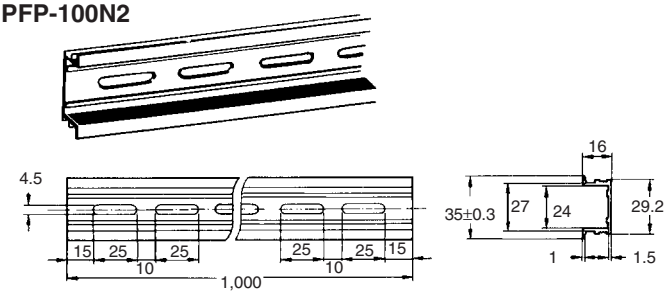


Mounting Tracks

PFP-100N, PFP-50N



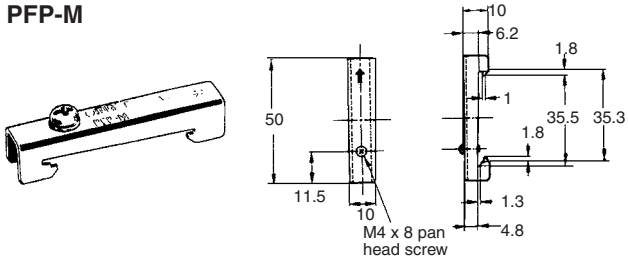
PFP-100N2



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

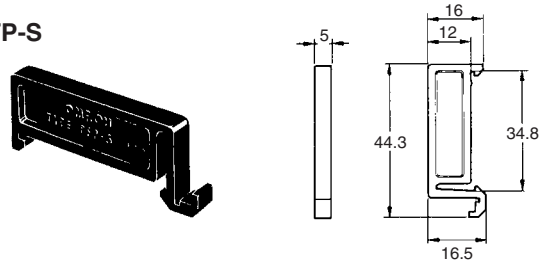
End Plate

PFP-M



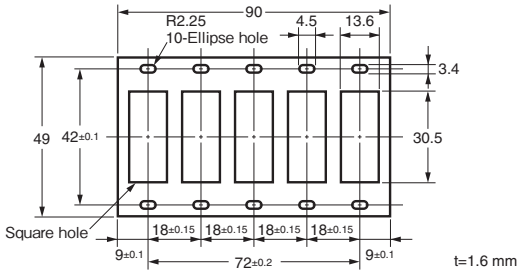
Spacer

PFP-S



Mounting Plate

P2R-P



Safety Precautions

Be sure to read 'the Common Precautions' in the website at the following URL:
http://www.ia.omron.com/.

Refer to *Safety Precautions for All Solid State Relays* of your OMRON website.
Refer to *Products Related to Common Sockets and DIN Tracks for precautions on the applicable Sockets* of your OMRON website.
Refer to *PYF-□□-PU/P2RF-□□-PU for precautions on Push-In Plus Terminal Block Sockets* of your OMRON website.

Precautions for Correct Use	Supplementary comments on what to do or avoid doing to prevent failure to operate, malfunction, or undesirable effects on product performance.

Precautions for Correct Use

About the Built-in Diodes

The diodes that are built into the Relays are designed to absorb reverse voltage from the Relay's coil. If a large surge in voltage is applied to the diode from an external source, the element will be destroyed.
If there is the possibility of large voltage surges that could be applied to the elements from an external source, take any necessary surge absorption measures.

Latching Levers

- Turn OFF the power supply when operating the latching lever. After you use the latching lever always return it to its original state.
- Do not use the latching lever as a switch.
- The latching lever can be used for 100 operations minimum.

Relay Replacement

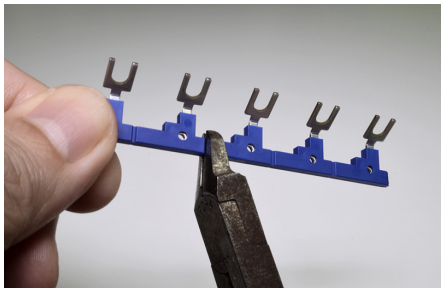
To replace the Relay, turn OFF the power supply to the load and Relay coil sides to prevent unintended operation and possible electrical shock.

Coil tape color

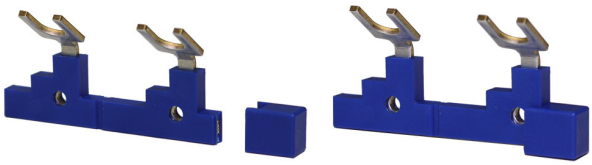
Pink tape is used for the AC coil type and blue tape is used for the DC coil type, making it easy to distinguish AC and DC.

Using a short-circuit bar

- Use the short-circuit bar that is suitable for the socket you are using and the location of use.
- The short-circuit bar can be cut to match any number of poles. Cut with a tool as appropriate for the number of relays and sockets. When using a cut short-circuit bar, take care to avoid injuring yourself on the cut surface.
- When cutting with a tool, insert the tool from the plastic part and cut along the slot in the plastic part between terminals. If you cut a part other than the slot in the plastic part between terminals, it may not be possible to attach the insulating cap.



- When using a cut short-circuit bar (P2DN), always use the provided cap to protect the charger part.



- Use the short-circuit bar to short-circuit two or more output terminals, or two or more input terminals.
- Do not use a deformed short-circuit bar. Risk of failure, malfunctioning, or deterioration of characteristics.
- In socket terminals, insert the short-circuit bar in the correct orientation all the way into all terminals, and then secure with screws.
- Install the short -circuit bar before wiring.

Common connection method when using a short bar

When connecting the P2RF-□□-PU input common, insert the short bar into only the A1 or A2 side.

Equivalent Labels from Other Companies and Recommended Label Printers

Use the following label printer.
The following table gives the manufacturer's model number as of March 2017.

Manufacturer	Omron	Phoenix Contact	Weidmuller	Cembre
Label	XW5Z-P4.0LB1	UCT-TM6	MF 10/6	MG-CPM-04 41391
	XW5Z-P2.5LB2	UCT-TMF5	---	---
Label printer	--- *	BLUEMARK CLED, THERMOMARK CARD SET PLUS, THERMOMARK CARD	PrintJet ADVCANCED, Plotter MCP Plus, Plotter MCP Basic	Markingenius MG3

✻When using a printing tool, use a Phoenix Contact label printer.
Note: Ask the label manufacturer or printer manufacturer for details.

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2022.11

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