OMRON

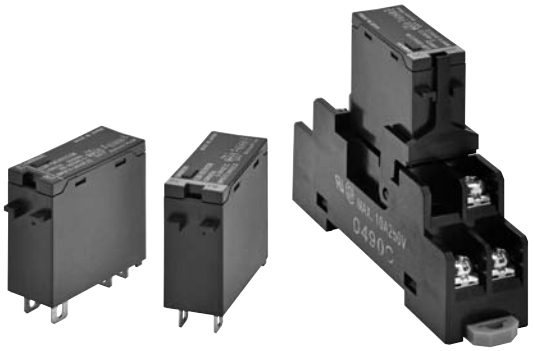
I/O Solid State Relays
G3R-I/O

SSR with Plug-in Terminals

The Same Shape as the G2R-1-S Power Relays

- Reduces wiring work by 60% when combined with the P2RF-05-PU Push-In Plus Socket (according to actual OMRON measurements).
- These I/O solid state relays can be mounted in OMRON G70A I/O Terminals.
- Lineup includes Input Modules for microloads and Output Modules for standard loads.
- Lineup also includes UL, CSA, and TÜV-certified models (-UTU models).

RoHS Compliant



Note: The socket is optional.

Refer to the standards certifications and compliance section of your OMRON website for the latest information on certified models.

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

Ordering Information

List of Models

Input Modules for Microloads

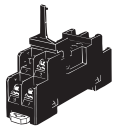
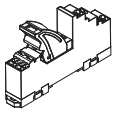
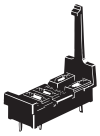
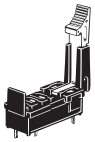
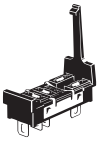
Insulation method	Operation indicator	Response speed	Applicable load	Input rated voltage	Model
Photocoupler	Yes	---	4 to 32 VDC 0.1 to 100 mA	100 to 240 VAC	**G3R-IAZR1SN AC100-240**
		High-speed		5 VDC	**G3R-IDZR1SN DC5**
				12 to 24 VDC	**G3R-IDZR1SN DC12-24**
		Low-speed		5 VDC	**G3R-IDZR1SN-1 DC5**
				12 to 24 VDC	**G3R-IDZR1SN-1 DC12-24**

Output Modules for Standard Loads

Insulation method	Operation indicator	Zero cross function	Applicable load	Input rated voltage	Model
Phototriac	Yes	Yes	2 A at 100 to 240 VAC	5 to 24 VDC	**G3R-OA202SZN DC5-24**
		No			**G3R-OA202SLN DC5-24**
Photocoupler		---	2 A at 5 to 48 VDC		**G3R-ODX02SN DC5-24**
			1.5 A at 48 to 200 VDC		**G3R-OD201SN DC5-24**

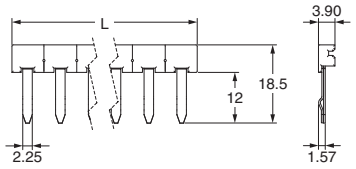
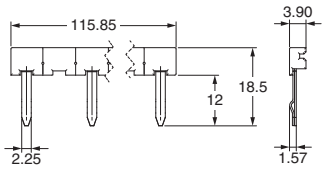
Accessories (Order Separately)

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	Output 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	Input 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

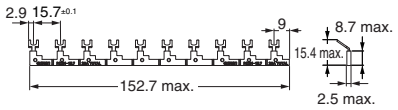
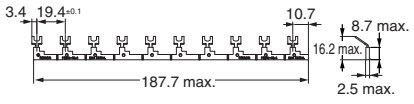
Labels

Applicable sockets	Model	Manufacturer	Minimum order (Box) (quantity per Box)
P2RF-05-PU	MG-CPM-04 41391	Cembre	1,344 (28 Sheet/48 Pieces)

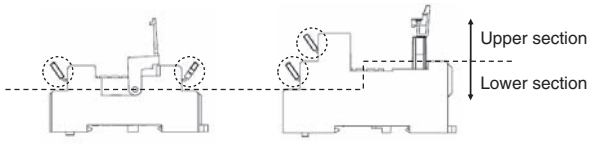
Note: PRINTER: MARKINGENIUS MG3 (Ask to your Omron contact for more details on printers)

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

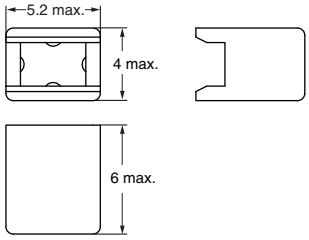
Note: 1. Select an applicable type of short bars by checking applicable socket type, appearance, and dimensions.
2. Use the Short Bars for crossover wiring within one Socket or between Sockets.
3. Cannot be used on the P2RF-05.
4. Use the short bars on the lower section of the socket.
When using the 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.



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

Accessories for Short Bars (P2DN)

Cap

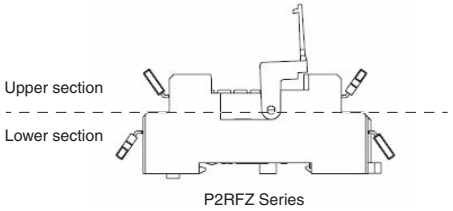
Short Bars Models	Appearance	Dimensions (mm)	Model
P2DN-19.4-100S P2DN-15.7-100S			P2DN-CP100

For Screw Terminal Sockets (P2RFZ-05)

Terminal covers

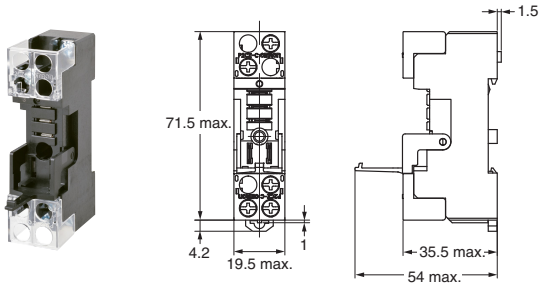
Applicable sockets	Appearance	Model	Minimum order (set)
P2RFZ-05		**P2CZ-C**	

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.



Dimensions with terminal cover

P2RFZ-05

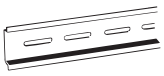
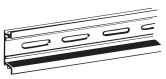


Labels

Applicable socets	Model	Manufacturer	Minimum order (Box) (quantity per Box)
P2RFZ-05-E	**MG-CPM-04 41390N**	Cembre	1,680 (35 Sheet/48 Pieces)

Note: PRINTER: MARKINGENIUS MG3 (Ask to your Omron contact for more details on printers)

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

Input Modules for Microloads

Input Side

Model	Item	Rated voltage	Operating voltage	Input current	Must-operate voltage	Must-release voltage
G3R-IAZR1SN		100 to 240 VAC	60 to 264 VAC	15 mA max.	60 VAC max.	20 VAC min.
G3R-IDZR1SN		5 VDC	4 to 6 VDC	8 mA max.	4 VDC max.	1 VDC min.
G3R-IDZR1SN		12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.
G3R-IDZR1SN-1		5 VDC	4 to 6 VDC		4 VDC max.	1 VDC min.
G3R-IDZR1SN-1		12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.

Output Side

Model	Item	Load voltage	Load current
G3R-IAZR1SN		4 to 32 VDC	0.1 to 100 mA
G3R-IDZR1SN			
G3R-IDZR1SN			
G3R-IDZR1SN-1			
G3R-IDZR1SN-1			

Output Modules for Standard Loads

Input Side

Model	Item	Rated voltage	Operating voltage	Input current	Must-operate voltage	Must-release voltage
G3R-OA202SZN		5 to 24 VDC	4 to 32 VDC	15 mA max. (at 25° C)	4 VDC max.	1 VDC min.
G3R-OA202SLN						
G3R-ODX02SN				8mA max.		
G3R-OD201SN						

Output Side

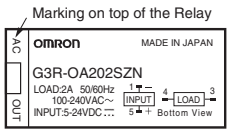
Model	Item	Load voltage	Load current*1	Surge withstand current
G3R-OA202SZN		75 to 264 VAC	0.05 to 2 A*2	30 A (60 Hz, 1 cycle)
G3R-OA202SLN				
G3R-ODX02SN		4 to 60 VDC	0.01 to 2 A*2	8 A (10 ms)
G3R-OD201SN		40 to 200 VDC	0.01 to 1.5 A*2	8 A (10 ms)

*1. Depends on the ambient temperature. Refer to the reference data *Load Current vs. Ambient Temperature Rating* on page 6 for details.
*2. The minimum current value is for a temperature of 10°C or higher.

I/O External Display

Lineup includes Input Modules and Output Modules.
The I/O Module classification and AC/DC classification are also indicated in the markings on top of the Relay.

Marking	Specifications
AC IN	Input Modules for Microloads, AC input
DC IN	Input Modules for Microloads, DC input
AC OUT	Output Modules for Standard Loads, AC output
DC OUT	Output Modules for Standard Loads, DC output



Characteristics

Input Modules for Microloads

Model / Item	G3R-IAZR1SN	G3R-IDZR1SN	G3R-IDZR1SN-1
Operation time	20 ms max.	0.1 ms max.	15 ms max.
Release time			
Response frequency	10 Hz	1 kHz	10 Hz
Output ON voltage drop	1.6 V max.		
Leakage current	5 μA max.		
Insulation resistance	100 MΩ min. between I/O		
Dielectric strength	4,000 VAC for 1 min. between I/O		
Vibration resistance	10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)		
Shock resistance	1,000 m/s²		
Storage temperature	–30 to 100°C (with no icing)		
Ambient operating temperature	–30 to 80°C (with no icing)		
Ambient operating humidity	45% to 85% RH		
Weight	Approx. 18 g		

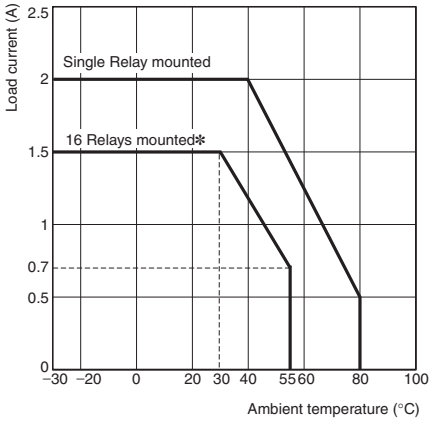
Output Modules for Standard Loads

Model / Item	G3R-OA202SZN	G3R-OA202SLN	G3R-ODX02SN	G3R-OD201SN
Operation time	1/2 load power supply cycle + 1 ms max.	1 ms max.		
Release time	1/2 load power supply cycle + 1 ms max.		2 ms max.	
Response frequency	20 Hz		100 Hz	
Output ON voltage drop	1.6 V max.			2.5 V max.
Leakage current	1.5 mA max.		1 mA max.	
Insulation resistance	100 MΩ min. between I/O			
Dielectric strength	4,000 VAC for 1 min. between I/O			
Vibration resistance	10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)			
Shock resistance	1,000 m/s²			
Storage temperature	–30 to 100°C (with no icing)			
Ambient operating temperature	–30 to 80°C (with no icing)			
Ambient operating humidity	45% to 85% RH			
Weight	Approx. 18 g			

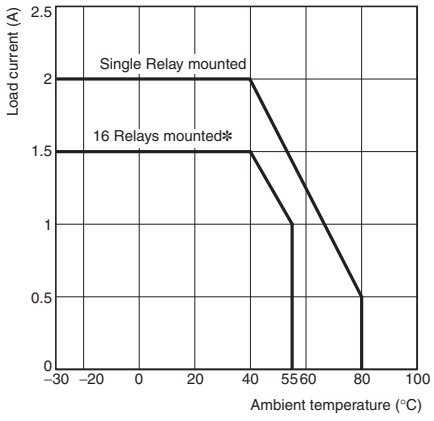
Engineering Data

Load Current vs. Ambient Temperature Rating

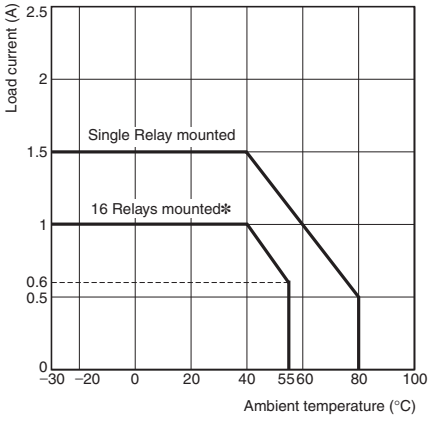
G3R-OA202S□N



G3R-ODX02SN (4 to 60 VDC)



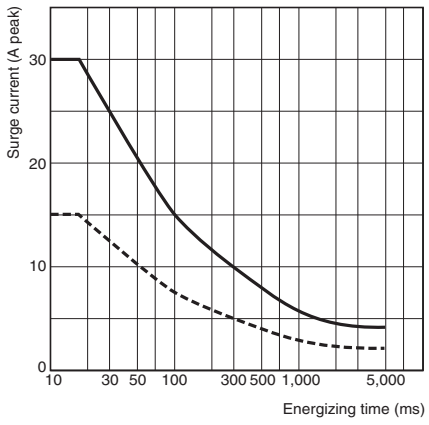
G3R-OD201SN (40 to 200 VDC)



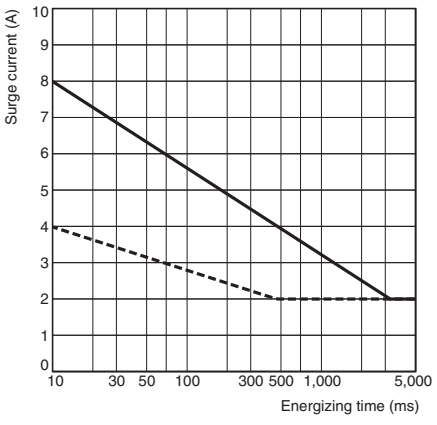
* On G70A-ZOC16, fully mounted.

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

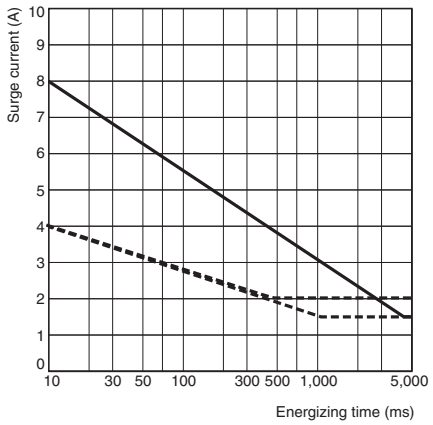
G3R-OA202S□N



G3R-ODX02SN (4 to 60 VDC)



G3R-OD201SN (40 to 200 VDC)

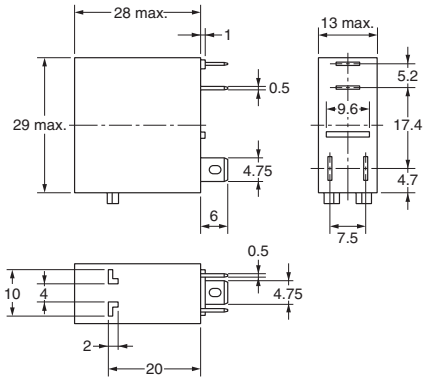


Dimensions

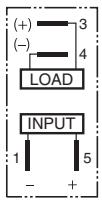
(Unit: mm)

Relay

G3R-I/O



Terminal Arrangement/
Internal Connections
(Bottom View)



The information in parentheses
in for a DC output.

Note: The load can be connected to either the positive or negative terminals.

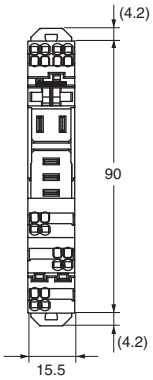
Socket Characteristics

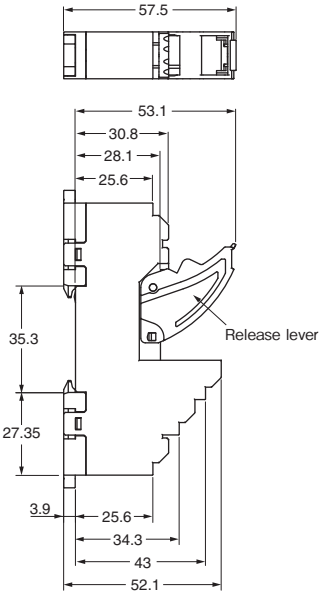
Model	Continuous carry current	Dielectric strength	Insulation resistance ✻	Remarks
P2RF-05-PU	10 A	Between contact terminals of same polarity: 1,000 VAC for 1 min	1,000 MΩ min.	
		Between coil and contact terminals: 4,000 VAC for 1 min		
P2RFZ-05(-E)	10 A	Between contact terminals of same polarity: 1,000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

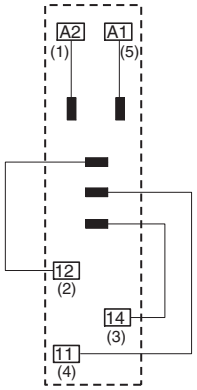
Track/Surface Mounting Sockets

P2RF-05-PU



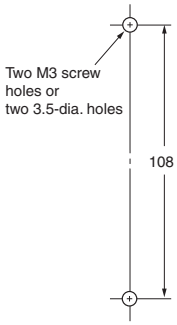


Terminal Arrangement/ Internal Connection Diagram (Top View)



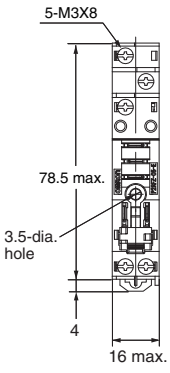
Note: The numbers in parentheses are traditionally used terminal numbers.

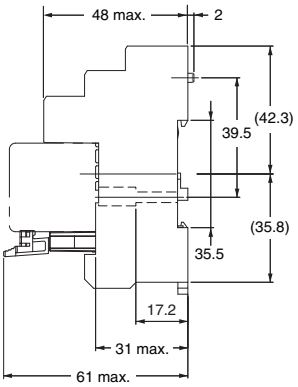
Mounting Hole Dimensions



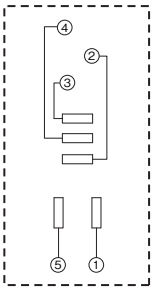
Note: Pull out the hooks to mount the Socket with screws.

P2RFZ-05-E

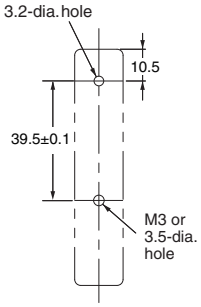




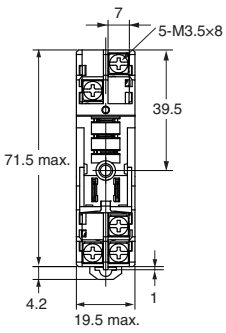
Terminal Arrangement/ Internal Connection Diagram (Top View)

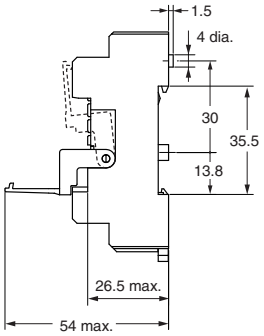


Mounting Hole Dimensions

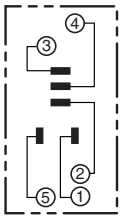


P2RFZ-05

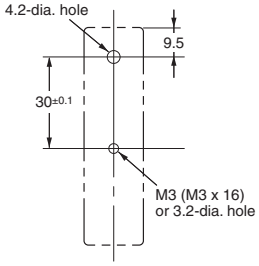




Terminal Arrangement/ Internal Connection Diagram (Top View)



Mounting Hole Dimensions



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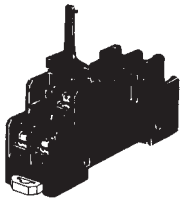
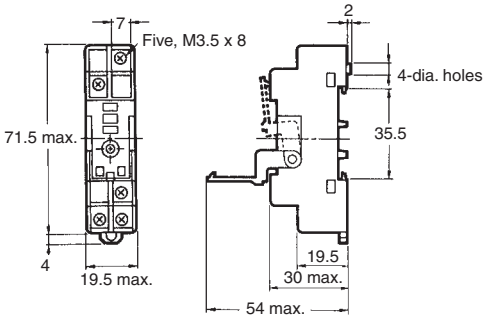
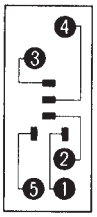
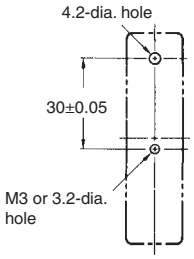




Terminal Arrangement (Top View)

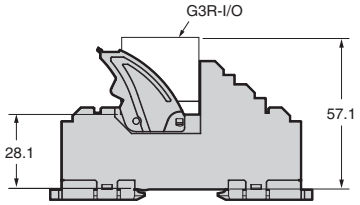


Mounting Holes (for Surface Mounting)

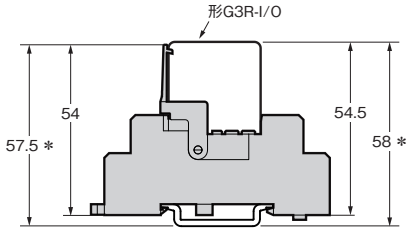


Mounting Height of Relay with Track/Surface Mounting Sockets

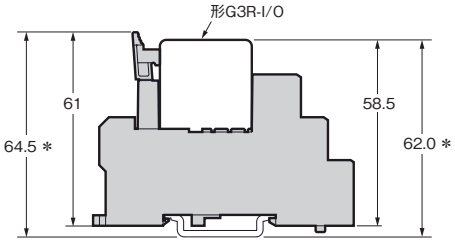
P2RF-05-PU



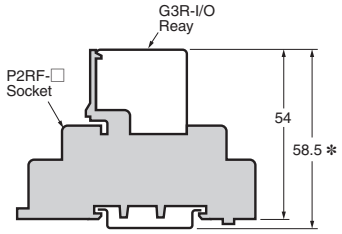
P2RFZ-05



P2RFZ-05-E



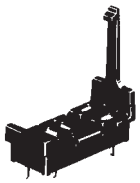
P2RF-05

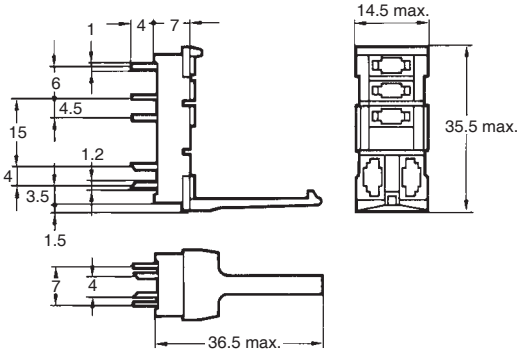


* These are values when using the DIN track PFP-□N.
Heights become higher by approximately 9 mm when using PFP-□N2.

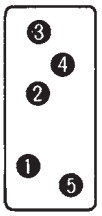
Back-connecting Sockets

P2R-05P (1-pole)



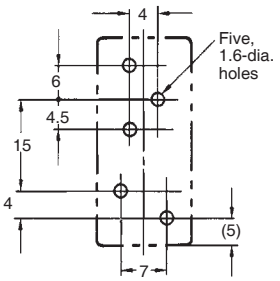


Terminal Arrangement (Bottom View)

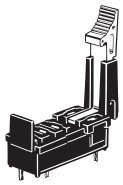


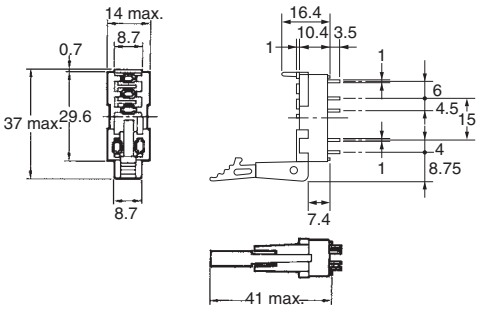
Mounting Holes

Tolerance: 0.1

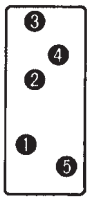


P2R-057P (1-pole)

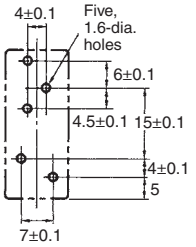




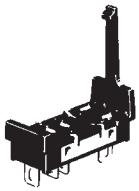
Terminal Arrangement (Bottom View)

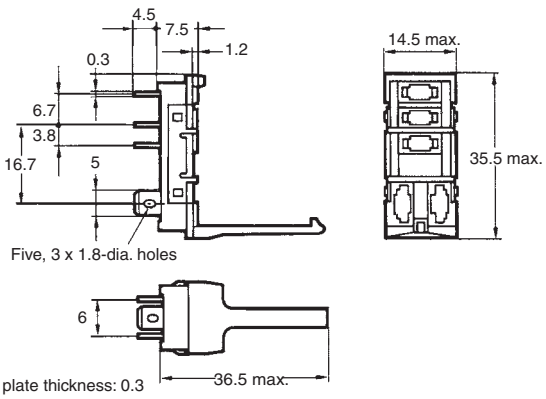


Mounting Holes

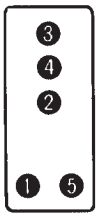


P2R-05A (1-pole)

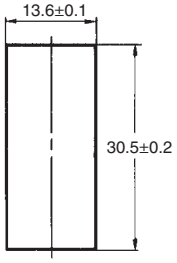




Terminal Arrangement (Bottom View)



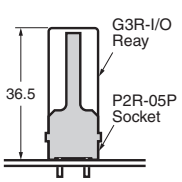
Panel Cutout



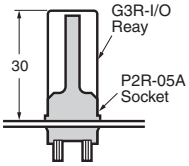
Recommended thickness of the panel is 1.6 to 2.0 mm

Mounting Height of Relay with Back-connecting Sockets

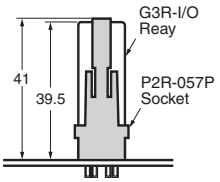
P2R-05P



P2R-05-A

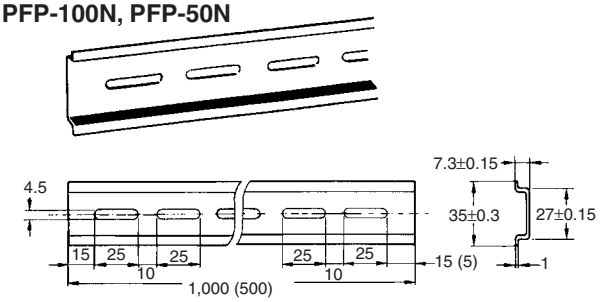


P2R-057P

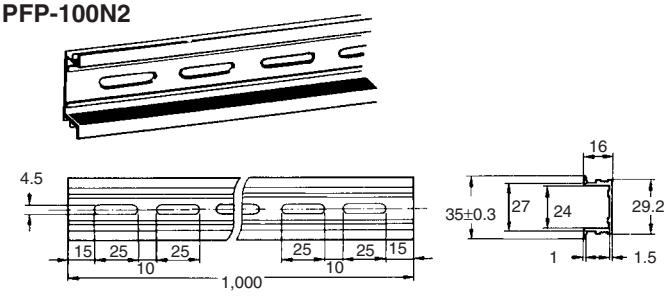


Mounting Tracks

PFP-100N, PFP-50N



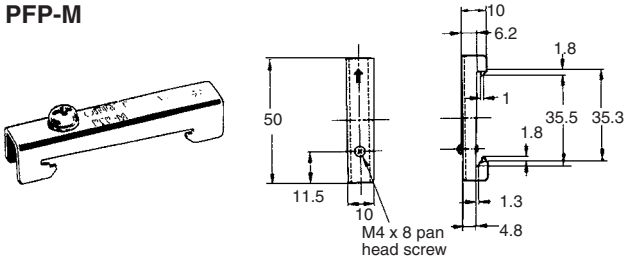
PFP-100N2



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

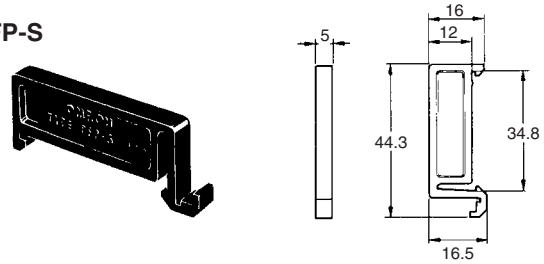
End Plate

PFP-M



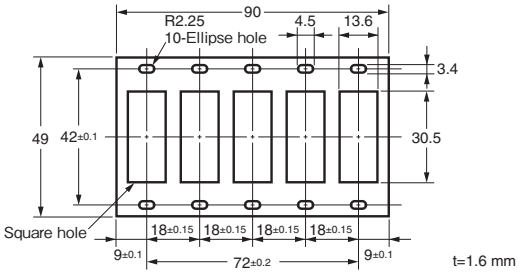
Spacer

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

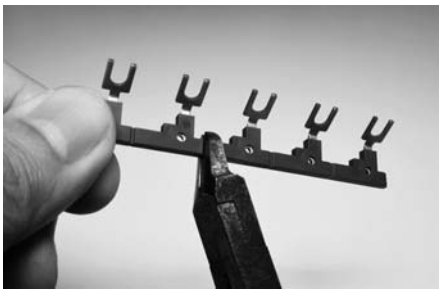
To replace the Relay, turn OFF the power supply to the load and Relay coil sides to prevent unintended operation and possible electrical shock.

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 Input terminals, or two or more Output 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.

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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Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Note: Do not use this document to operate the Unit.

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