

I/O Solid State Relays

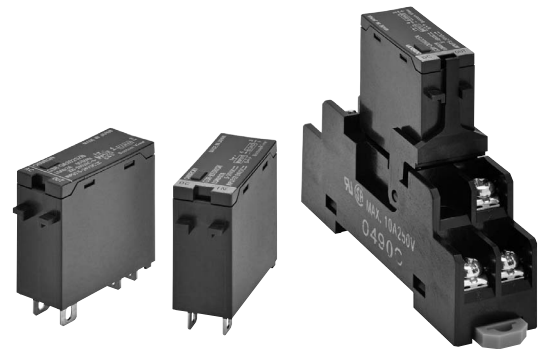
# G3R-I/O

## 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).



**Note:** The socket is optional.

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

RoHS Compliant



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

## Ordering Information

### List of Models

#### Input Modules for Microloads

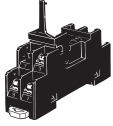

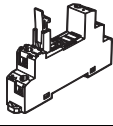
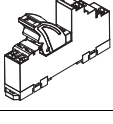
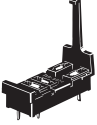
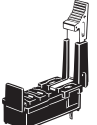
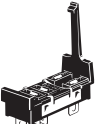
Insulation method	Operation indicator	Response speed	Applicable load	Input rated voltage	Model
Photocoupler	Yes	---	4 to 32 VDC 0.1 to 100 mA	100 to 240 VAC	<b>G3R-IAZR1SN AC100-240</b>
		High-speed		5 VDC	<b>G3R-IDZR1SN DC5</b>
		Low-speed		12 to 24 VDC	<b>G3R-IDZR1SN DC12-24</b>
				5 VDC	<b>G3R-IDZR1SN-1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

#### 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	<b>G3R-OA202SZN DC5-24</b>
		No			<b>G3R-OA202SLN DC5-24</b>
Photocoupler		---	2 A at 5 to 48 VDC		<b>G3R-ODX02SN DC5-24</b>
			1.5 A at 48 to 200 VDC		<b>G3R-OD201SN DC5-24</b>

## Accessories (Order Separately)

### Connection Sockets

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

## 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	Manufacturer	Minimum order (Box) (quantity per Box)
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)

## Accessories for Screw Terminal Sockets (P2RFZ-□-E)

### Short Bars

Pitch	No. of poles	Colors	Model	Minimum order (set)
15.7 mm	10	Blue (S)	P2DN-15.7-100S	1 One set (order unit) contains 10 short bars and 20 caps.

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

2. Cannot be used on the P2RF-□-E.

### Labels

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

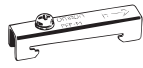

**Note:** PRINTER: MARKINGENIUS MG3 (Ask to your Omron contact for more details on printers)

## Accessories for Short Bars (P2DN)

### Cap

Model	Minimum order (bag)
P2DN-CP100	1 (100 pcs./bag)

## 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.

# G3R-I/O

## 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 5 for details.

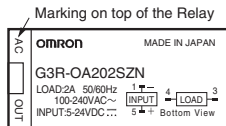
\*2. The minimum current value is for a temperature of 10°C or higher.

### 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/s <sup>2</sup>		
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		

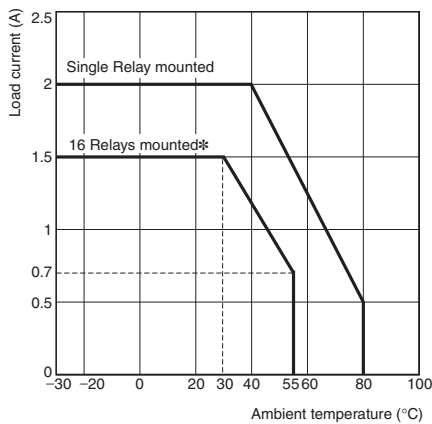
### Output Modules for Standard Loads

Model	Item	G3R-OA202SN	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/s <sup>2</sup>			
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			

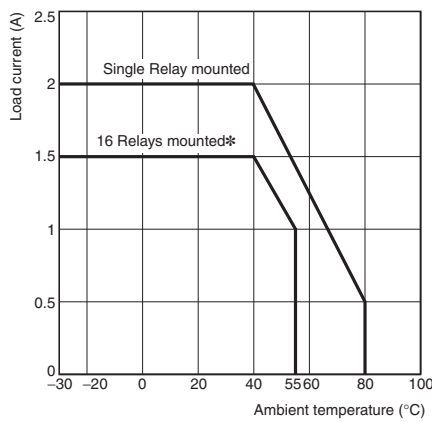
## Engineering Data

### Load Current vs. Ambient Temperature Rating

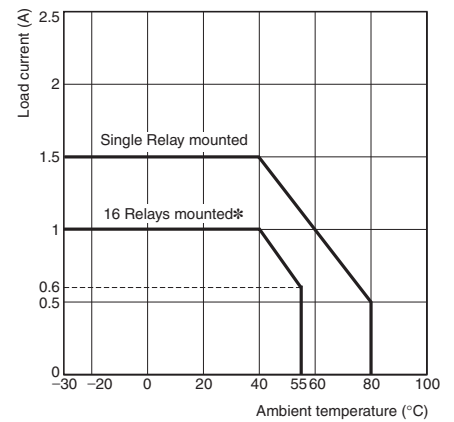
G3R-OA202SN□N



G3R-ODX02SN (4 to 60 VDC)



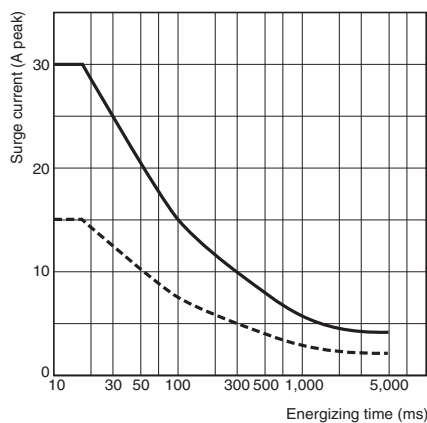
G3R-OD201SN (40 to 200 VDC)



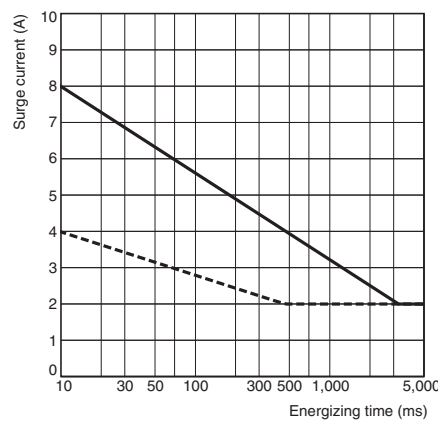
\* On G70A-ZOC16, fully mounted.

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

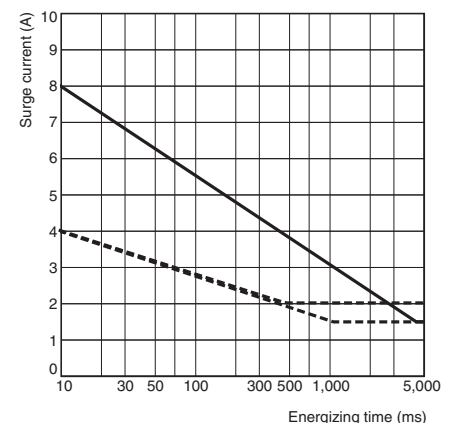
G3R-OA202SN□N



G3R-ODX02SN (4 to 60 VDC)



G3R-OD201SN (40 to 200 VDC)



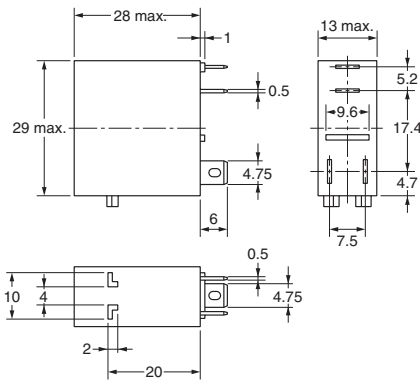
# G3R-I/O

## Dimensions

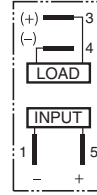
(Unit: mm)

### Relay

#### G3R-I/O



Terminal Arrangement/  
Internal Connections  
(Bottom View)

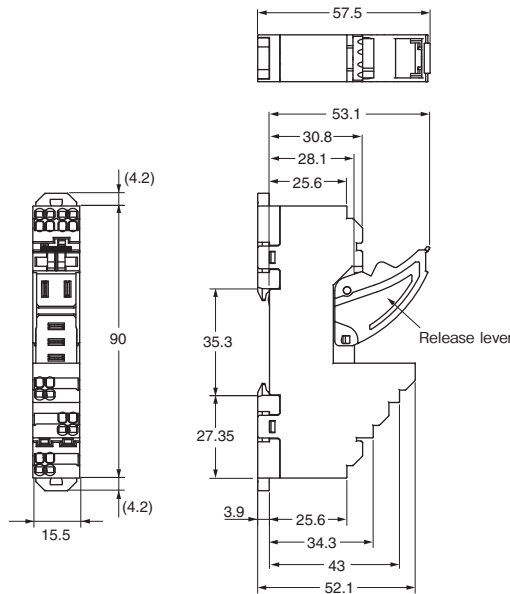


The information in parentheses  
in for a DC output.

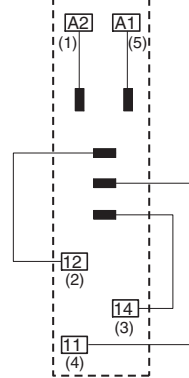
**Note:** The load can be connected to either the positive or negative terminals.

### Track/Surface Mounting Sockets

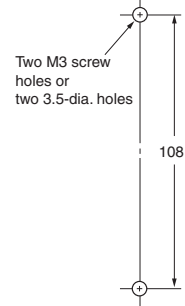
#### P2RF-05-PU



Terminal Arrangement/  
Internal Connection Diagram  
(Top View)



Mounting Hole  
Dimensions



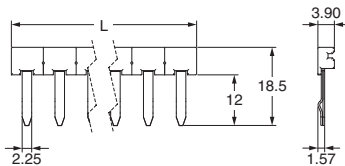
**Note:** The numbers in parentheses are traditionally used terminal numbers.

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

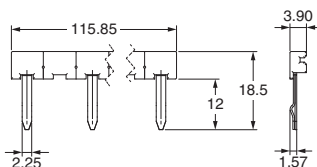
### Accessories for P2RF-□-PU

#### Short Bars

##### PYDN-7.75-□□ (7.75 mm)



##### PYDN-15.5-080□ (15.5 mm)



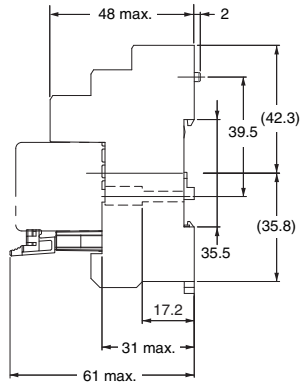
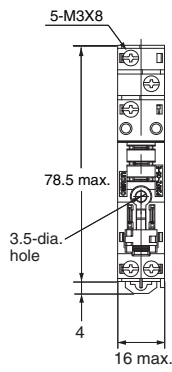
Application	Pitch	No. of poles	L (Length)	Colors	Model *	Maximum carry current
For Contact terminals (common)	7.75 mm	2	15.1	Red (R) Blue (S) Yellow (Y)	PYDN-7.75-020□	20 A
		3	22.85		PYDN-7.75-030□	
		4	30.6		PYDN-7.75-040□	
		20	154.6		PYDN-7.75-200□	
For Coil terminals	15.5 mm	8	115.85		PYDN-15.5-080□	

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

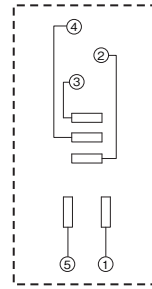
**Note: 1.** Use the Short Bars for crossover wiring within one Socket or between Sockets.

**2.** When using short bar to coil terminals of PYF-□□-PU, make sure to use PYDN-31.0-080□ (31 mm).  
When using short bar to coil terminals of P2RF-□□-PU, make sure to use PYDN-15.5-080□ (15.5 mm).

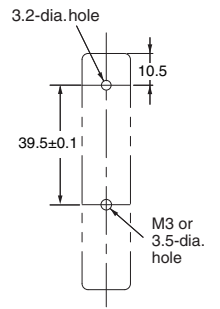
**P2RFZ-05-E**



**Terminal Arrangement/  
Internal Connection Diagram  
(Top View)**

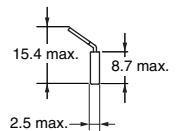
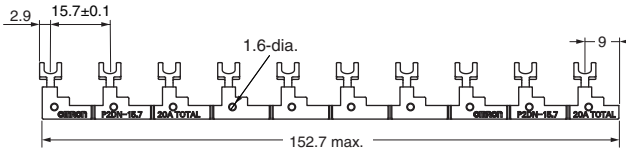
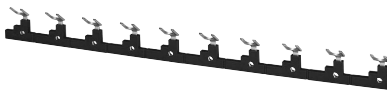


**Mounting Hole  
Dimensions**



**Accessories for P2RFZ-□-E  
Short Bars**

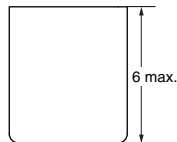
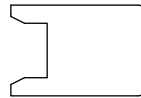
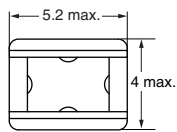
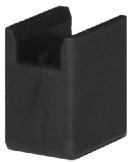
**P2DN-15.7-100S (15.7 mm)**  
Maximum carry current: 20A



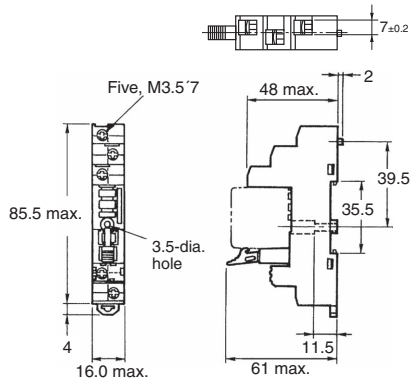
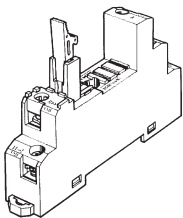
**Note:** Each Short Bar set comes with 20 Caps.

**Accessories for P2DN  
Cap**

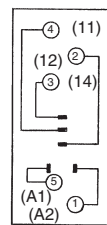
**P2DN-CP100**



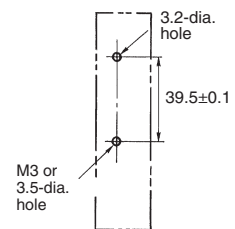
**P2RF-05-E**



**Terminal Arrangement  
(Top View)**

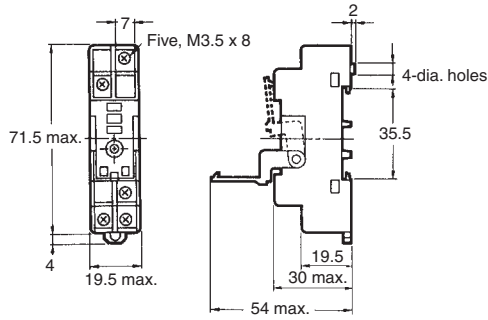
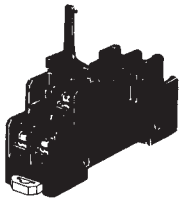


**Mounting Holes  
(for Surface Mounting)**

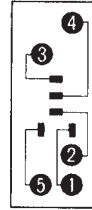


**Note:** Pin numbers in parentheses apply to DIN standard.

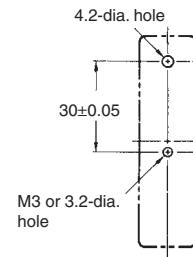
## P2RF-05



**Terminal Arrangement (Top View)**

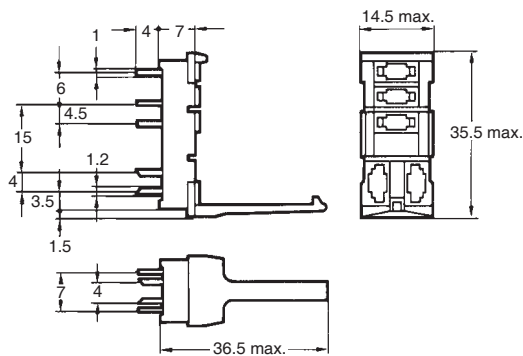
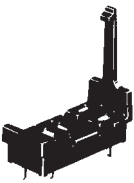


**Mounting Holes (for Surface Mounting)**



## Back-connecting Sockets

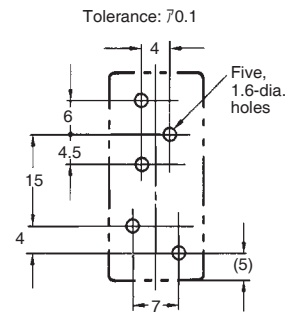
### P2R-05P (1-pole)



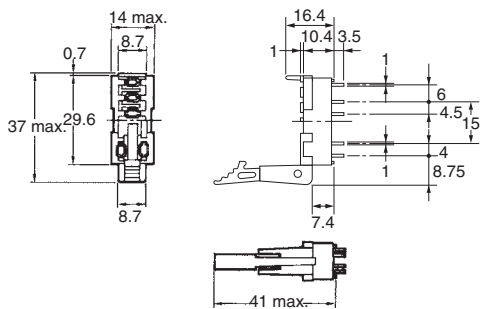
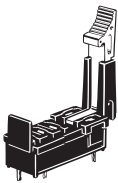
**Terminal Arrangement (Bottom View)**



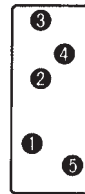
**Mounting Holes**



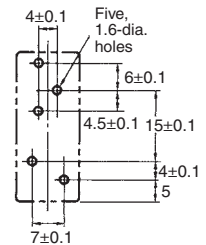
### P2R-057P (1-pole)



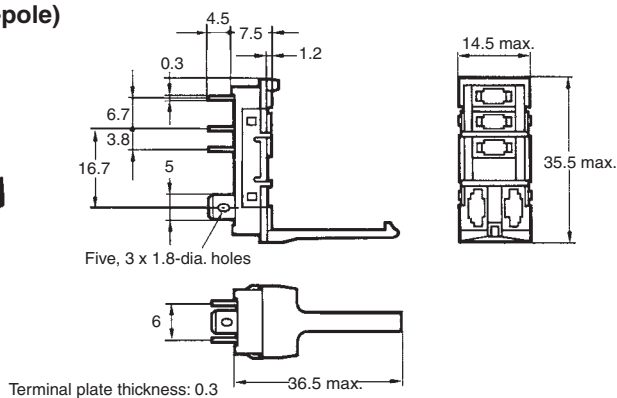
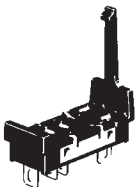
**Terminal Arrangement (Bottom View)**



**Mounting Holes**



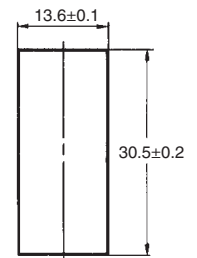
### P2R-05A (1-pole)



**Terminal Arrangement (Bottom View)**



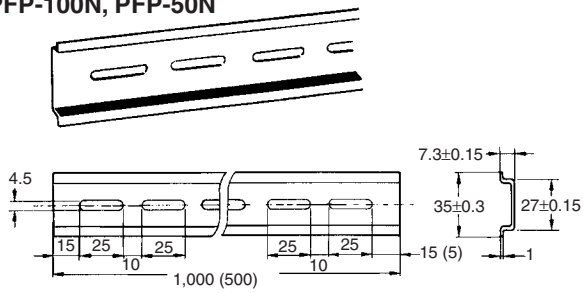
**Panel Cutout**



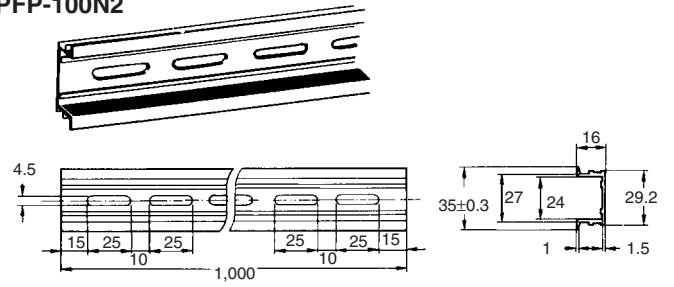
Recommended thickness of the panel is 1.6 to 2.0 mm

**Mounting Tracks**

**PFP-100N, PFP-50N**



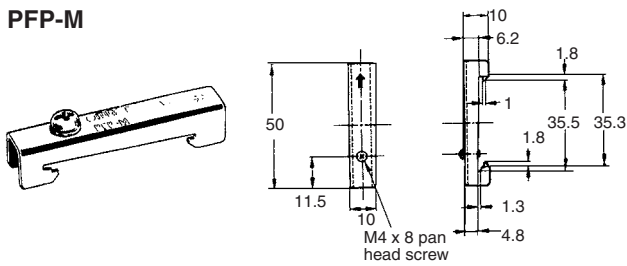
**PFP-100N2**



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

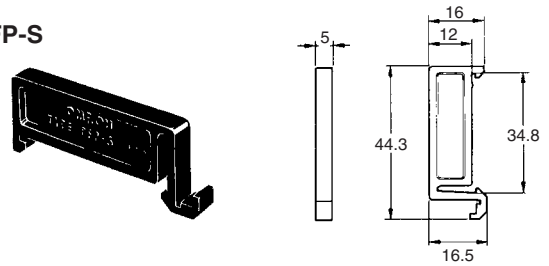
**End Plate**

**PFP-M**



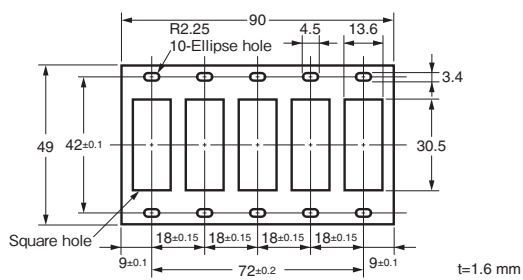
**Spacer**

**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.

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

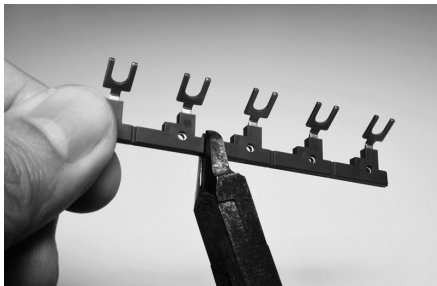
To replace the Relay, turn OFF the power supply to the load and Relay coil sides to prevent unintended operation and possible electrical shock.

#### Coil tape color

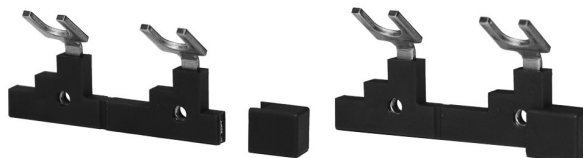
Pink tape is used for the AC coil type and blue tape is used for the DC coil type, making it easy to distinguish AC and DC.

#### Using a short-circuit bar

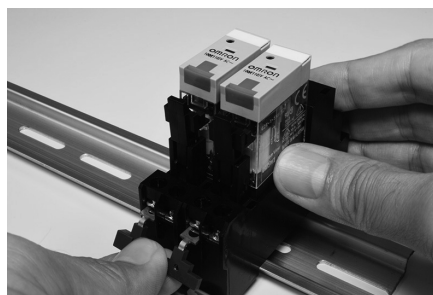
- Use the short-circuit bar that is suitable for the socket you are using and the location of use.
- Note that the P2DN short-circuit bar for the P2RFZ-E Socket has both a short-circuit bar for shorting coil terminals and a short-circuit bar for shorting contact COM terminals.
- The short-circuit bar 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.



- The proper orientation for installing the short-circuit bar is with the molded part facing inward.



- Use the short-circuit bar to short-circuit two or more coil terminals, or two or more contact COM 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 ADVANCED, 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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CSM\_1\_2\_1119  
Cat. No. J235-E1-01

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