# General-purpose Relay

#### Versatile and Function-filled Miniature Power Relay for Sequence Control and Power Switching Applications

- Models with lockable test buttons now available.
- Many variations possible through a selection of operation indicators (mechanical and LED indicators), lockable test button, built-in diode and CR (surge suppression), bifurcated contacts, etc.
- Arc barrier standard on 4-pole Relays.
- Dielectric strength: 2,000 VAC (coil to contact)
- · Environment-friendly cadmium-free contacts.
- Safety standard approvals obtained.
- Wide range of Sockets (PY, PYF Series) and optional parts are available.
- Max. Switching Current: 2-pole: 10 A, 4-pole: 5 A
- Provided with nameplate.

# **Ordering Information**

### Relays

### **Standard Coil Polarity**

| Туре                            | Contact form      | Plug-in socket/s            | Without LED indicator                          |      |
|---------------------------------|-------------------|-----------------------------|--|------|
|                                 |                   | Standard with LED indicator | With LED indicator and<br>lockable test button |      |
| Standard                        | DPDT              | MY2N                        | MY2IN  | MY2  |
|                                 | 4PDT              | MY4N                        | MY4IN  | MY4  |
|                                 | 4PDT (bifurcated) | MY4ZN                       | MY4ZIN   | MY4Z |
| With built-in diode             | DPDT              | MY2N-D2                     | MY2IN-D2                                       |      |
| (DC only)                       | 4PDT              | MY4N-D2                     | MY4IN-D2                                       |      |
|                                 | 4PDT (bifurcated) | MY4ZN-D2                    | MY4ZIN-D2                                      |      |
| With built-in CR                | DPDT              | MY2N-CR                     | MY2IN-CR                                       |      |
| (220/240 VAC, 110/120 VAC only) | 4PDT              | MY4N-CR                     | MY4IN-CR                                       |      |
|                                 | 4PDT (bifurcated) | MY4ZN-CR                    | MY4ZIN-CR                                      |      |

### **Reverse Coil Polarity**

| Туре                | Contact form      | Plug-in socket/Solder terminals |  |  |
|---------------------|-------------------|---------------------------------|--|--|
|                     |                   | With LED indicator              | With LED indicator and<br>lockable test button |  |
| Standard (DC only)  | DPDT              | MY2N1                           | MY2IN1   |  |
|                     | 4PDT              | MY4N1                           | MY4IN1   |  |
|                     | 4PDT (bifurcated) | MY4ZN1                          | MY4ZIN1  |  |
| With built-in diode | DPDT              | MY2N1-D2                        | MY2IN1-D2                                      |  |
| (DC only)           | 4PDT              | MY4N1-D2                        | MY4IN1-D2                                      |  |
|                     | 4PDT (bifurcated) | MY4ZN1-D2                       | MY4ZIN1-D2                                     |  |

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

Example: MY2 <u>6VAC</u> (S) t L New model Rated coil voltage



# C E 🚕 🤋 🏵 🕏 🕀 LR

## ■ Accessories (Order Separately)

### **Sockets**

|        | Front Mounting                        | Front-mounting<br>Socket (DIN-track/<br>screw mounting) | Back-mounting Socket |              |                     |                         |               |  |
|--------|---------------------------------------|---|----------------------|--------------|---------------------|-------------------------|---------------|--|
|        | Socket (DIN-track/<br>screwless clamp |   | Solder terminals     |              | Wire-wrap terminals |                         | PCB terminals |  |
| [SLC]) | coron mounting)                       | Without clip  | With clip            | Without clip | With clip           |                         |               |  |
| 2      | PYF08S                                | PYF08A-E<br>PYF08A-N                                    | PY08                 | PY08-Y1      | PY08QN<br>PY08QN2   | PY08QN-Y1<br>PY08QN2-Y1 | PY08-02       |  |
| 4      | PYF14S                                | PYF14A-E<br>PYF14A-N<br>PYF14-ESS<br>PYF14-ESN          | PY14                 | PY14-Y1      | PY14QN<br>PY14QN2   | PY14QN-Y1<br>PY14QN2-Y1 | PY14-02       |  |

### Socket Hold-down Clip Pairing

| Relay type                 | Poles |        |                       |                        |                                 | Back-conne | Back-connecting Socket     |         |                 |
|----------------------------|-------|--------|-----------------------|------------------------|---------------------------------|------------|----------------------------|---------|-----------------|
|                            |       |        | rewless clamp<br>LC]) | screw                  | screw mounting)                 |            | Solder/Wire-wrap terminals |         | erminals        |
|                            |       | 10     |                       | Socket                 | Clip                            | Socket     | Clip                       | Socket  | Clip            |
| Without 2-pole test button | 2     | PYF08S | PYCM-08S              | PYF08A-E<br>PYF08A-N   | PYC-A1                          | PY08(QN)   | PYC-P<br>PYC-P2            | PY08-02 | PYC-P<br>PYC-P2 |
|                            | 4     | PYF14S | PYCM-14S              | PYF14A-E<br>PYF14A-N   |                                 | PY14(QN)   |                            | PY14-02 |                 |
|                            |       |        |                       | PYF14-ESS<br>PYF14-ESN | PYC0 (metal)<br>PYC35 (plastic) |            |                            |         |                 |
| 2-pole<br>test button      | 2     | PYF08S | PYCM-08S              | PYF08A-E<br>PYF08A-N   | PYC-E1                          | PY08(QN)   | PYC-P2                     | PY08-02 | PYC-P2          |

### **Mounting Plates for Sockets**

| Socket model                     | For 1 Socket | For 18 Sockets | For 36 Sockets |
|----------------------------------|--------------|----------------|----------------|
| PY08, PY08QN(2), PY14, PY14QN(2) | PYP-1        | PYP-18         | PYP-36         |

Note: PYP-18 and PYP-36 can be cut into any desired length in accordance with the number of Sockets.

### **Track and Accessories**

| Supporting Track (length = 500 mm)   | PFP-50N             |
|--------------------------------------|---------------------|
| Supporting Track (length = 1,000 mm) | PFP-100N, PFP-100N2 |
| End Plate                            | PFP-M               |
| Spacer                               | PFP-S               |

# Specifications

# ■ Coil Ratings

2

| 1  | Rated voltage Rated current Coil<br>resistance Coil inductance<br>(reference value) |                  |                  | Must<br>operate<br>voltage | Must<br>release<br>voltage | Max.<br>voltage | Power<br>consumption<br>(approx.) |               |      |               |
|----|---|------------------|------------------|----------------------------|----------------------------|-----------------|-----------------------------------|---------------|------|---------------|
|    |   | 50 Hz            | 60 Hz            |                            | Arm. OFF                   | Arm. ON         | %                                 | of rated volt | age  |               |
| AC | 6 V*  | 214.1 mA         | 183 mA           | 12.2 Ω                     | 0.04 H                     | 0.08 H          | 80% max.                          | 30% min.      | 110% | 1.0 to 1.2 VA |
|    | 12 V  | 106.5 mA         | 91 mA            | 46 Ω                       | 0.17 H                     | 0.33 H          |                                   |               |      | (60 Hz)       |
|    | 24 V  | 53.8 mA          | 46 mA            | 180 Ω                      | 0.69 H                     | 1.30 H          |                                   |               |      |               |
|    | 48/50 V*  | 24.7/<br>25.7 mA | 21.1/<br>22.0 mA | 788 Ω                      | 3.22 H                     | 5.66 H          |                                   |               |      |               |
|    | 110/120 V   | 9.9/10.8 mA      | 8.4/9.2 mA       | 4,430 Ω                    | 19.20 H                    | 32.1 H          |                                   |               |      | 0.9 to 1.1 VA |
|    | 220/240 V   | 4.8/5.3 mA       | 4.2/4.6 mA       | 18,790 Ω                   | 83.50 H                    | 136.4 H         |                                   |               |      | (60 Hz)       |
| DC | 6 V*  | 151 mA           |                  | 39.8 Ω                     | 0.17 H                     | 0.33 H          | -                                 | 10% min.      |      | 0.9 W         |
|    | 12 V  | 75 mA            |                  | 160 Ω                      | 0.73 H                     | 1.37 H          |                                   |               |      |               |
|    | 24 V  | 37.7 mA          |                  | 636 Ω                      | 3.20 H                     | 5.72 H          |                                   |               |      |               |
|    | 48 V*   | 18.8 mA          |                  | 2,560 Ω                    | 10.60 H                    | 21.0 H          | 1                                 |               |      |               |
|    | 100/110 V   | 9.0/9.9 mA       |                  | 11,100 Ω                   | 45.60 H                    | 86.2 H          | 1                                 |               |      |               |

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for rated currents and ±15% for DC coil resistance.

2. Performance characteristic data are measured at a coil temperature of 23°C.

3. AC coil resistance and impedance are provided as reference values (at 60 Hz).

4. Power consumption drop was measured for the above data. When driving transistors, check leakage current and connect a bleeder resistor if required.

5. Rated voltage denoted by "\*" will be manufactured upon request. Ask your OMRON representative.

### ■ Contact Ratings

| Item                              | 2-pole          |                          | 4-pole         |                          | 4-pole (bifurcated) |                          |
|-----------------------------------|-----------------|--------------------------|----------------|--------------------------|---------------------|--------------------------|
|                                   | Resistive load  | Inductive load           | Resistive load | Inductive load           | Resistive load      | Inductive load           |
|                                   | (cos∳ = 1)      | (cos∳ = 0.4, L/R = 7 ms) | (cos∳ = 1)     | (cos∳ = 0.4, L/R = 7 ms) | (cos∳ = 1)          | (cos∳ = 0.4, L/R = 7 ms) |
| Rated load                        | 5A, 250 VAC     | 2A, 250 VAC              | 3 A, 250 VAC   | 0.8 A, 250 VAC           | 3 A, 250 VAC        | 0.8 A, 250 VAC           |
|                                   | 5A, 30 VDC      | 2 A, 30 VDC              | 3 A, 30 VDC    | 1.5 A, 30 VDC            | 3 A, 30 VDC         | 1.5 A, 30 VDC            |
| Carry current                     | 10 A (see note) |                          | 5 A (see note) |                          |                     |                          |
| Max. switching                    | 250 VAC         |                          | 250 VAC        |                          |                     |                          |
| voltage                           | 125 VDC         |                          | 125 VDC        |                          |                     |                          |
| Max. switching<br>current         | 10 A            |                          | 5 A            |                          |                     |                          |
| Max. switching                    | 2,500 VA        | 1,250 VA                 | 1,250 VA       | 500 VA                   | 1,250 VA            | 500 VA                   |
| power                             | 300 W           | 300 W                    | 150 W          | 150 W                    | 150 W               | 150 W                    |
| Failure rate<br>(reference value) | 5 VDC, 1 mA     |                          | 1 VDC, 1 mA    |                          | 1 VDC, 100 μA       |                          |

Note: Don't exceed the carry current of a Socket in use. Please see page 10.

### ■ Characteristics

| Item                     | All Relays   |
|--------------------------|--|
| Contact resistance       | 100 mΩ max.  |
| Operate time             | 20 ms max.   |
| Release time             | 20 ms max.   |
| Max. operating frequency | Mechanical: 18,000 operations/hr<br>Electrical: 1,800 operations/hr (under rated load)   |
| Insulation resistance    | 1,000 MΩ min. (at 500 VDC)   |
| Dielectric strength      | 2,000 VAC, 50/60 Hz for 1.0 min (1,000 VAC between contacts of same polarity)  |
| Vibration resistance     | Destruction: 10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude)<br>Malfunction: 10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude) |
| Shock resistance         | Destruction: 1,000 m/s <sup>2</sup><br>Malfunction: 200 m/s <sup>2</sup>   |
| Endurance                | See the following table.   |
| Ambient temperature      | Operating: -55°C to 70°C (with no icing)   |
| Ambient humidity         | Operating: 5% to 85%   |
| Weight                   | Approx. 35 g   |

Note: The values given above are initial values.

### ■ Endurance Characteristics

| Pole                | Mechanical life (at 18,000 operations/hr) | Electrical life<br>(at 1,800 operations/hr under rated load) |
|---------------------|---|--|
|                     |   | 500,000 operations min.                                      |
| 4-pole              | DC:100,000,000 operations min.            | 200,000 operations min.                                      |
| 4-pole (bifurcated) | 20,000,000 operations min.                | 100,000 operations min.                                      |

### ■ Approved Standards

### VDE Recognitions (File No. 112467UG, IEC 255, VDE 0435)

| No. of poles | Coil ratings      | Contact ratings                                   | Operations   |
|--------------|-------------------|---|--|
|              | 110/120, 200/220, | 10 A, 250 VAC (cosφ=1)<br>10 A, 30 VDC (L/R=0 ms) | 10 x 10 <sup>3</sup>                                   |
| 4            | 220/240 VAC       | 5 A, 250 VAC (cosφ=1)<br>5 A, 30 VDC (L/R=0 ms)   | 100 x 10 <sup>3</sup><br>MY4Z AC; 50 x 10 <sup>3</sup> |

### UL508 Recognitions (File No. 41515)

| No. of poles | Coil ratings | Contact ratings   | Operations          |
|--------------|--------------|---|---------------------|
|              |              | 10 A, 30 VDC (General purpose)<br>10 A, 250 VAC (General purpose) | 6 x 10 <sup>3</sup> |
| 4            |              | 5 A, 250 VAC (General purpose)<br>5 A, 30 VDC (General purpose)   |                     |

### CSA C22.2 No. 14 Listings (File No. LR31928)

|   | No. of poles | Coil ratings | Contact ratings   | Operations          |
|---|--------------|--------------|---|---------------------|
| 2 |              |              | 10 A, 30 VDC<br>10 A, 250 VAC                               | 6 x 10 <sup>3</sup> |
| 4 |              |              | 5 A, 250 VAC (Same polarity)<br>5 A, 30 VDC (Same polarity) |                     |

### IMQ (File No. EN013 to 016)

| No. of poles | Coil ratings                                      | Contact ratings               | Operations   |
|--------------|---|-------------------------------|--|
| 2            | 6, 12, 24, 48/50, 100/110<br>110/120, 200/220,    | 10 A, 30 VDC<br>10 A, 250 VAC | 10 x 10 <sup>3</sup>                                   |
| 4            | 220/240 VAC<br>6, 12, 24, 48, 100/110,<br>125 VDC | 5 A, 250 VAC<br>5 A, 30 VDC   | 100 x 10 <sup>3</sup><br>MY4Z AC; 50 x 10 <sup>3</sup> |

### LR Recognitions (File No. 98/10014)

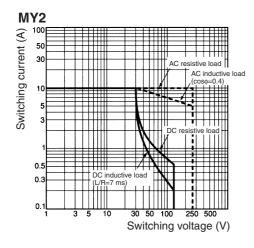
| No. of poles | Coil ratings                 | Contact ratings   | Operations           |
|--------------|------------------------------|---|----------------------|
| 2            | 6 to 240 VAC<br>6 to 125 VDC | 10 A, 250 VAC (Resistive)<br>2 A, 250 VAC (PF0.4)<br>10 A, 30 VDC (Resistive)<br>2 A, 30 VDC (L/R=7 ms)   | 50 x 10 <sup>3</sup> |
| 4            |                              | 5 A, 250 VAC (Resistive)<br>0.8 A, 250 VAC (PF0.4)<br>5 A, 30 VDC (Resistive)<br>1.5 A, 30 VDC (L/R=7 ms) | 50 x 10 <sup>3</sup> |

### SEV Listings (File No. 99.5 50902.01)

| No. of poles | Coil ratings                 | Contact ratings               | Operations   |
|--------------|------------------------------|-------------------------------|--|
| 2            | 6 to 240 VAC<br>6 to 125 VDC | 10 A, 250 VAC<br>10 A, 30 VDC | 10 x 10 <sup>3</sup>                                   |
| 4            |                              | 5 A, 250 VAC<br>5 A, 30 VDC   | 100 x 10 <sup>3</sup><br>MY4Z AC; 50 x 10 <sup>3</sup> |

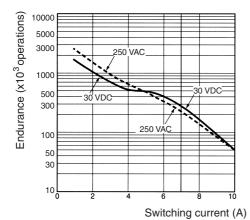
# **Engineering Data**

### **Maximum Switching Power**

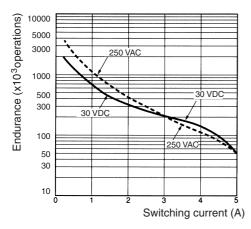


### **Endurance**

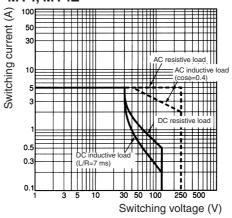
#### MY2 (Resistive Loads)



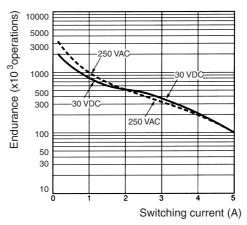
#### MY4 (Resistive Loads)



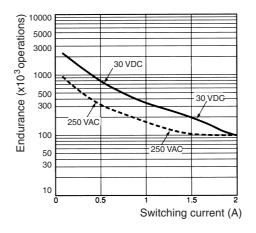
#### MY4, MY4Z



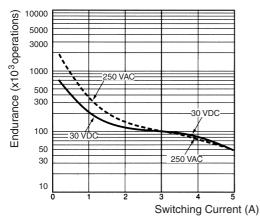
#### MY2 (Inductive Loads)



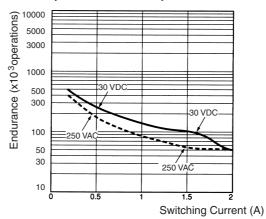




#### MY4Z (Resistive Loads)



#### MY4Z (Inductive Loads)



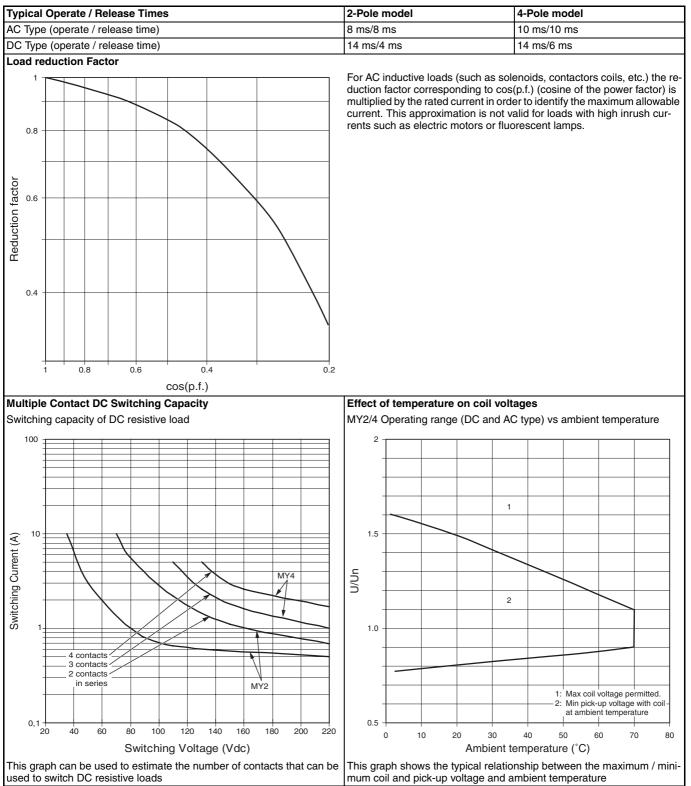
# **Technical and Environmental Properties**

|                                  | 2-Pole model  | 4-Pole model   |  |
|----------------------------------|---|----------------|--|
| Tracking Resistance              | 600 CTI (base)  | 600 CTI (base) |  |
| Environmental Protection         | RT1 RT1   |                |  |
| Flammability Class               | Base, Insulator, Spool<br>Case, Indicator, Nameplate, Push Button |                |  |
| Pollution Degree                 | 2   | 1              |  |
| Creepage Distance 4.0 mm 3.2 mm  |   | 3.2 mm         |  |
| Clearance Distance 3.0 mm 3.0 mm |   | 3.0 mm         |  |
| Contact Material Ag              |   | AgNi + Au      |  |

6

# Typical information for reference only

The following data is provided as experimental and/or calculated data for reference only. These figures fall under the category of typical behaviour and the operation of individual relays will vary according to the exact operating conditions.

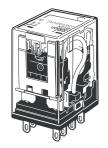


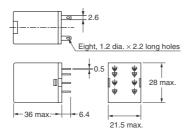
# Dimensions

Note: All units are in millimeters unless otherwise indicated.

### 2-Pole Models

MY2N

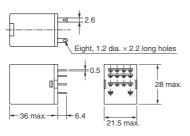




### **4-Pole Models**

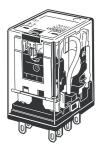
MY4N

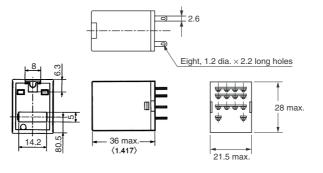




### Models with Test Button

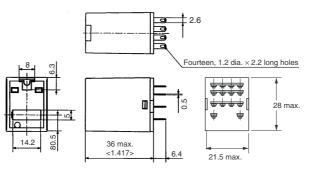
MY2IN





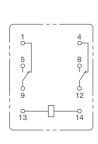
MY4IN

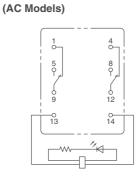




# **Terminal Arrangement/Internal Connections (Bottom View)**

#### MY2





4

8 9

6 12

0-14

″⊀

MY2N-CR/MY2IN-CR

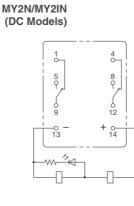
0 5 9

9

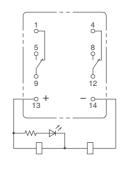
-0 13

(AC Models Only)

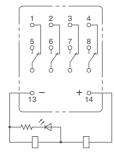
MY2N/MY2IN



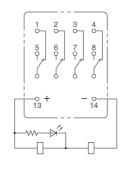
MY2N1/MY2IN1 (DC Models Only)

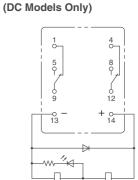


MY4(Z)N/MY4(Z)IN (DC Models)



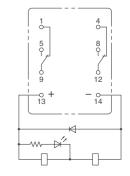
MY4(Z)N1/MY4(Z)IN1 (DC Models Only)



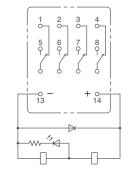


MY2N-D2/MY2IN-D2

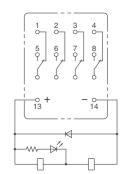
MY2N1-D2/MY2IN1-D2 (DC Models Only)



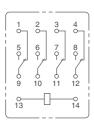
MY4(Z)N-D/MY4(Z)IN-D2 (DC Models Only)



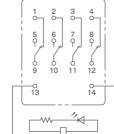
MY4(Z)N1-D2/MY4(Z)IN1-D2 (DC Models Only)



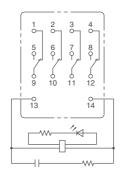
MY4(Z)



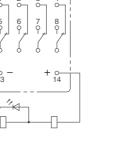
MY4(Z)N/MY4(Z)IN (AC Models)



MY4(Z)N-CR/MY4(Z)IN-CR (AC Models Only)



Note: The DC models have polarity.



# Socket for MY

### Track-mounted (DIN Track) Socket Conforms to VDE 0106, Part 100

- Snap into position along continuous sections of any mounting track.
- Facilitates sheet metal design by standardized mounting dimensions.
- Design with sufficient dielectric separation between terminals eliminates the need of any insulating sheet.

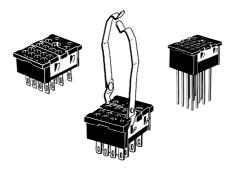


**71 ()** 

# ■ Safety Standards for Sockets

| Model              | Standards | File No. |
|--------------------|-----------|----------|
| PYF08A-E, PYF08A-N | UL508     | E87929   |
| PYF14A-E, PYF14A-N | CSA22.2   | LR31928  |
| PYF14-ESN,         | UL508     | E244189  |
| PYF14-ESS          | CSA22.2   | LR225761 |

### **Back-connecting Sockets**



### ■ Specifications

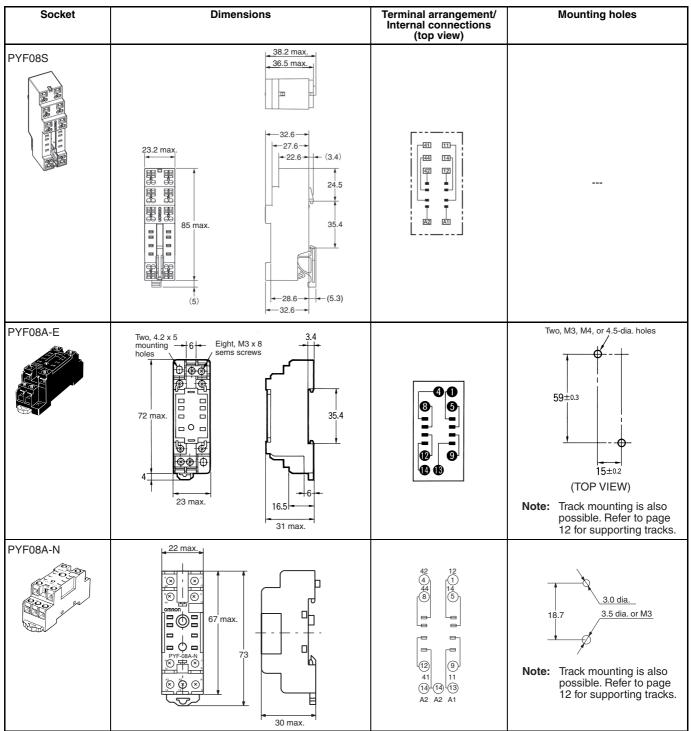
| Item            | Pole | Model                 | Carry current    | Dielectric withstand voltage | Insulation resistance<br>(see note 2) |
|-----------------|------|-----------------------|------------------|------------------------------|---------------------------------------|
| Screwless Clamp | 2    | PYF08S                | 10 A             | 2,000 VAC, 1 min             | Less than 1,000 $M\Omega$             |
| Terminal Socket | 4    | PYF14S                | 5 A              |                              |                                       |
| Track-mounted   | 2    | PYF08A-E              | 7 A              | 2,000 VAC, 1 min             | 1,000 MΩ min.                         |
| Socket          |      | PYF08A-N (see note 3) | 7 A (see note 4) |                              |                                       |
|                 | 4    | PYF14A-E              | 5 A              |                              |                                       |
|                 |      | PYF14A-N (see note 3) | 5 A (see note 4) |                              |                                       |
|                 | 4    | PYF14-ESN/-ESS        | 12 A             | > 3 kV                       | > 5 MΩ                                |
| Back-connecting | 2    | PY08(-Y1)             | 7 A              | 1,500 VAC, 1 min             | 100 MΩ min.                           |
| Socket          |      | PY08QN(-Y1)           |                  |                              |                                       |
|                 |      | PY08-02               |                  |                              |                                       |
|                 | 4    | PY14(-Y1)             | 3 A              |                              |                                       |
|                 |      | PY14QN(-Y1)           |                  |                              |                                       |
|                 |      | PY14-02               |                  |                              |                                       |

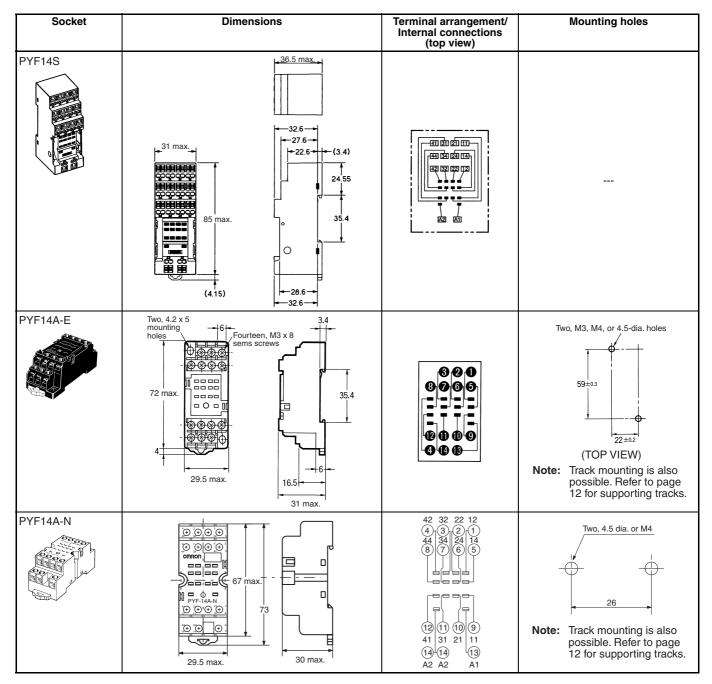
Note: 1. The values given above are initial values.

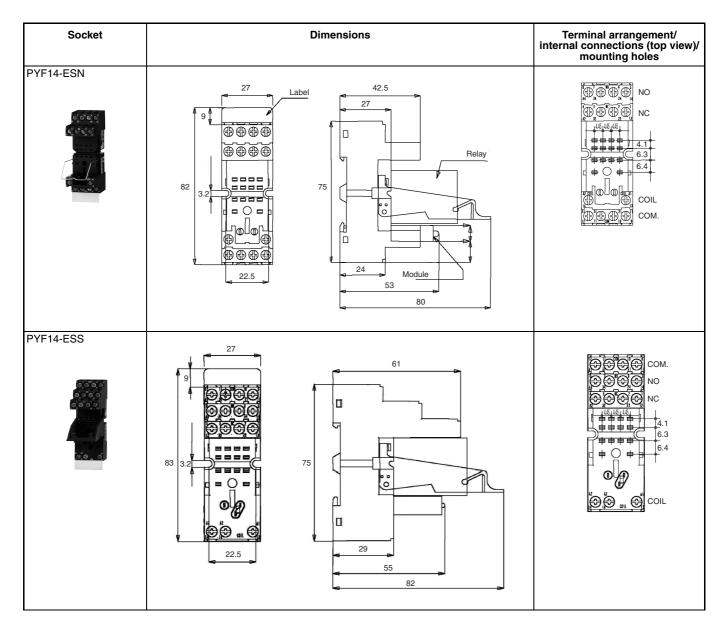
- 2. The values for insulation resistance were measured at 500 V at the same place as the dielectric strength.
- 3. The maximum operating ambient temperature for the PYF08A-N and PYF14A-N is  $55^\circ\text{C}.$
- 4. When using the PYF08A-N or PYF14A-N at an operating ambient temperature exceeding 40°C, reduce the current to 60%.
- 5. The MY2(S) can be used at 70°C with a carry current of 7 A.

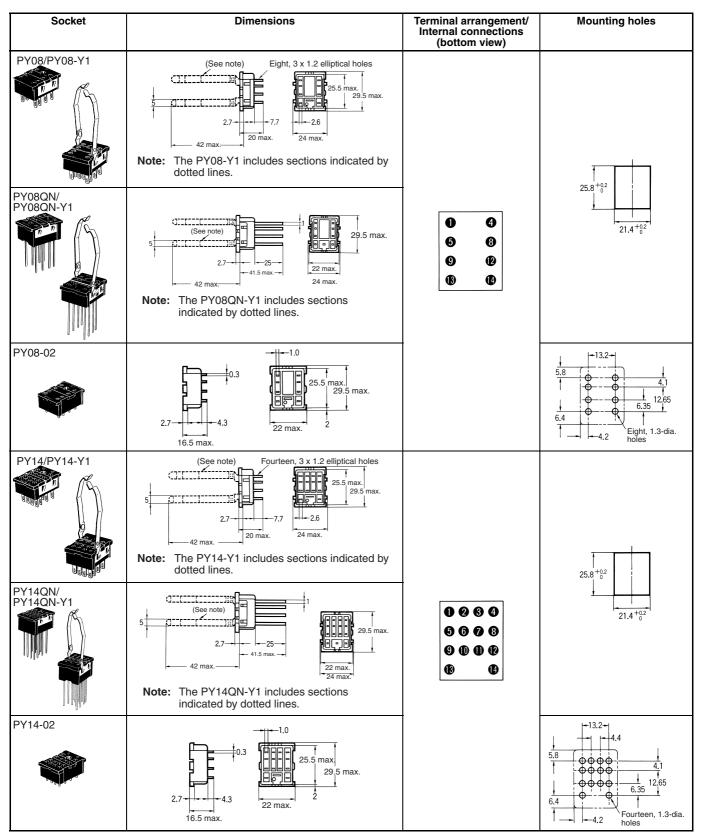
### Dimensions

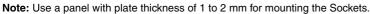
Note: All units are in millimeters unless otherwise indicated.



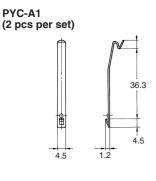


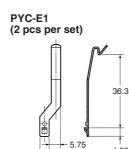






### **Hold-down Clips**



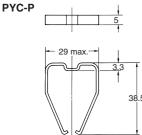


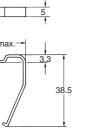
4 5±0.1

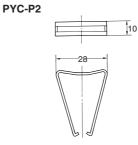
#### For sockets PYF14-ESN/-ESS

| Model   | Description                                 |
|---------|---|
| PYC 0   | Metal spring clip (Used with<br>Relay only) |
| PYC 35  | Plastic holding clip (Used with Relay only) |
| PYC TR1 | Thermoplastic writeable label               |

Note: For total dimensions with plastic clip please refer to drawings of the sockets.







4.25

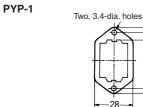
### **Mounting Plates for Back-connecting Sockets**

t=1.6

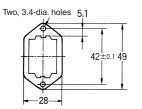
13.1

5.1

42±0.1 49



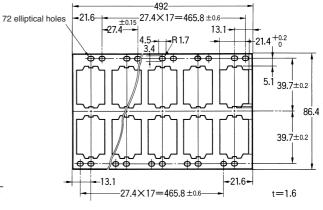
-21.6



+32 +<u>±0.15</u> +27.4→1 +27.4→1 -492-

R17

**PYP-36** 



**PYP-18** 

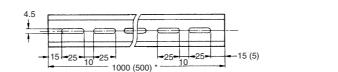
72 elliptical holes

#### 4 4 ው ው $\phi \phi$ $\phi \phi$ $\phi \phi$ <del>ф ф</del> t = 1.6

### **Tracks and Accessories**

#### **Supporting Tracks**

PFP-50N/PFP-100N

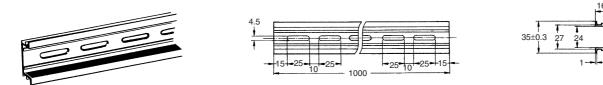




Note: The figure in the parentheses is for PFP-50N.

29.2

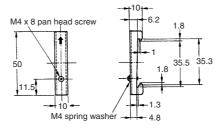
#### **PFP-100N2**





PFP-M

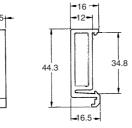




### Spacer

PFP-S





# **Precautions**

Refer to General Precautions on page 11 of the General-purpose Relays and Power Relays Group Catalog (X034).

### ■ Connections

Do not reverse polarity when connecting DC-operated Relays with built-in diodes or indicators or high-sensitivity DC-operated Relays.

### Mounting

• Whenever possible, mount Relays so that it is not subject to vibration or shock in the same direction as that of contact movement.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. J03E-EN-01A In the interest of product improvement, specifications are subject to change without notice.

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