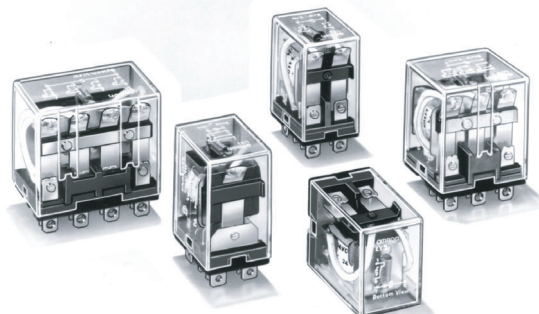


General-purpose Relay

LY





A Miniature Power Relay

- Equipped with arc barrier.
- Dielectric strength: 2,000 V.
- Built-in diode models added to the LY Series.
- Single-pole and double-pole models are applicable to operating coils with ratings of 100/110 VAC, 110/120 VAC, 200/220 VAC, 220/240 VAC, or 100/110 VDC).
- Three-pole and four-pole models are applicable to operating coils with ratings of 100/110 VAC, 200/220 VAC, or 100/110 VDC).



Ordering Information

■ Open Relays

| Type | Contact form | Plug-in/solder terminals  | Plug-in/solder terminals with LED indicator  | PCB terminals  | Upper-mounting Plug-in/solder terminals  |
|-------------------------------|-------------------|---|--|--|--|
| Standard | SPDT | LY1 | LY1N | LY1-0 | LY1F |
| | DPDT | LY2 | LY2N | LY2-0 | LY2F |
| | DPDT (bifurcated) | LY2Z | LY2ZN | LY2Z-0 | LY2ZF |
| | 3PDT | LY3 | LY3N | LY3-0 | LY3F |
| | 4PDT | LY4 | LY4N | LY4-0 | LY4F |
| With built-in diode (DC only) | SPDT | LY1-D | LY1N-D2 | --- | --- |
| | DPDT | LY2-D | LY2N-D2 | --- | --- |
| | DPDT (bifurcated) | LY2Z-D | LY2ZN-D2 | --- | --- |
| | 3PDT | LY3-D | --- | --- | --- |
| | 4PDT | LY4-D | LY4N-D2 | --- | --- |
| With built-in CR (AC only) | SPDT | --- | --- | --- | --- |
| | DPDT | LY2-CR | LY2N-CR | --- | --- |
| | DPDT (bifurcated) | LY2Z-CR | LY2ZN-CR | --- | --- |

Note: 1. When ordering, add the rated coil voltage to the model number. Rated coil voltages are given in the coil ratings table.

Example: LY2, 6 VAC

 Rated coil voltage

2. Relays with #187 quick connect terminals are also available with SPDT and DPDT contact. Ask your OMRON representative for details.
3. SEV models are standard Relays excluding DPDT (bifurcated) models.
4. VDE- or LR- qualifying Relays must be specified when ordering.

■ Accessories (Order Separately)

Sockets

| Poles | Front-connecting Socket | Back-connecting Socket | | |
|--------|---------------------------|--------------------------|--------------------|---------------|
| | DIN track/screw terminals | Plug-in/solder terminals | Wrapping terminals | PCB terminals |
| 1 or 2 | PTF08A-E, PTF08A | PT08 | PT08QN | PT08-0 |
| 3 | PTF11A | PT11 | PT11QN | PT11-0 |
| 4 | PTF14A-E, PTF14A | PT14 | PT14QN | PT14-0 |

Note: 1. For PTF08-E and PTF14A-E, see "Track Mounted Socket."

2. PTF□A (-E) Sockets have met UL and CSA standards: UL 508/CSA C22.2.

Mounting Plates for Sockets

| Socket model | For 1 Socket | For 10 Sockets | For 12 Sockets | For 18 Sockets |
|----------------|--------------|----------------|----------------|----------------|
| PT08 PT08QN | PYP-1 | --- | --- | PYP-18 |
| PT11 PT11QN | PTP-1-3 | --- | PTP-12 | --- |
| PT14 PT14QN | PTP-1 | PTP-10 | --- | --- |

Socket-Hold-down Clip Pairings

| Relay type | Poles | Front-connecting Sockets | | Back-connecting Sockets | |
|---|-------|--------------------------|------------|-------------------------|------------|
| | | Socket model | Clip model | Socket model | Clip model |
| Standard, bifurcated contacts operation indicator, built-in diode | 1, 2 | PTF08A-E, PTF08A | PYC-A1 | PT08(QN), PT08-0 | PYC-P |
| | 3 | PTF11A | | PT11(QN), PT11-0 | |
| | 4 | PTF14A-E, PTF14A | | PT14(QN), PT14-0 | |
| CR circuit | 2 | PTF08A-E, PTF08A | Y92H-3 | PT08(QN), PT08-0 | PYC-1 |

Specifications

■ Coil Ratings

Single- and Double-pole Relays

| Rated voltage | | Rated current | | Coil resistance | Coil inductance (reference value) | | Must operate voltage | Must release voltage | Max. voltage | Power consum. (approx.) |
|---------------|-----------|---------------|------------|-----------------|-----------------------------------|----------|----------------------|----------------------|--------------|-------------------------|
| | | 50 Hz | 60 Hz | | Arm. OFF | Arm. ON | | | | |
| 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 (60 Hz) |
| | 12 V | 106.5 mA | 91 mA | 46 Ω | 0.17 H | 0.33 H | | | | |
| | 24 V | 53.8 mA | 46 mA | 180 Ω | 0.69 H | 1.30 H | | | | |
| | 50 V | 25.7 mA | 22 mA | 788 Ω | 3.22 H | 5.66 H | | | | |
| | 100/110 V | 11.7/12.9 mA | 10/11 mA | 3,750 Ω | 14.54 H | 24.6 H | | | | 0.9 to 1 VA (60 Hz) |
| | 110/120 V | 9.9/10.8 mA | 8.4/9.2 mA | 4,430 Ω | 19.20 H | 32.1 H | | | | |
| | 200/220 V | 6.2/6.8 mA | 5.3/5.8 mA | 12,950 Ω | 54.75 H | 94.07 H | | | | |
| | 220/240 V | 4.8/5.3 mA | 4.2/4.6 mA | 18,790 Ω | 83.50 H | 136.40 H | | | | |
| DC | 6 V | 150 mA | | 40 Ω | 0.16 H | 0.33 H | | 10% min. | | 0.9 W |
| | 12 V | 75 mA | | 160 Ω | 0.73 H | 1.37 H | | | | |
| | 24 V | 36.9 mA | | 650 Ω | 3.20 H | 5.72 H | | | | |
| | 48 V | 18.5 mA | | 2,600 Ω | 10.6 H | 21.0 H | | | | |
| | 100/110 V | 9.1/10 mA | | 11,000 Ω | 45.6 H | 86.2 H | | | | |

Note: See notes on the bottom of next page.

Three-pole Relays

| Rated voltage | | Rated current | | Coil resistance | Coil inductance (reference value) | | Must operate voltage | Must release voltage | Max. voltage | Power consum. (approx) |
|---------------|-----------|---------------|--------------|-----------------|-----------------------------------|---------|----------------------|----------------------|--------------|------------------------|
| | | 50 Hz | 60 Hz | | Arm. OFF | Arm. ON | | | | |
| AC | 6 V | 310 mA | 270 mA | 6.7 Ω | 0.03 H | 0.05 H | 80% max. | 30% min. | 110% | 1.6 to 2.0 VA (60 Hz) |
| | 12 V | 159 mA | 134 mA | 24 Ω | 0.12 H | 0.21 H | | | | |
| | 24 V | 80 mA | 67 mA | 100 Ω | 0.44 H | 0.79 H | | | | |
| | 50 V | 38 mA | 33 mA | 410 Ω | 2.24 H | 3.87 H | | | | |
| | 100/110 V | 14.1/16 mA | 12.4/13.7 mA | 2,300 Ω | 10.5 H | 18.5 H | | | | |
| | 200/220 V | 9.0/10.0 mA | 7.7/8.5 mA | 8,650 Ω | 34.8 H | 59.5 H | | | | |
| DC | 6 V | 234 mA | | 25.7 Ω | 0.11 H | 0.21 H | | 10% min. | | 1.4 W |
| | 12 V | 112 mA | | 107 Ω | 0.45 H | 0.98 H | | | | |
| | 24 V | 58.6 mA | | 410 Ω | 1.89 H | 3.87 H | | | | |
| | 48 V | 28.2 mA | | 1,700 Ω | 8.53 H | 13.9 H | | | | |
| | 100/110 V | 12.7/13 mA | | 8,500 Ω | 29.6 H | 54.3 H | | | | |

Note: See notes under next table.

Four-pole Relays

| Rated voltage | | Rated current | | Coil resistance | Coil inductance (reference value) | | Must operate voltage | Must release voltage | Max. voltage | Power consum. (approx) |
|---------------|-----------|---------------|-------------|-----------------|-----------------------------------|---------|----------------------|----------------------|--------------|------------------------|
| | | 50 Hz | 60 Hz | | Arm. OFF | Arm. ON | | | | |
| AC | 6 V | 386 mA | 330 mA | 5 Ω | 0.02 H | 0.04 H | 80% max. | 30% min. | 110% | 1.95 to 2.5 VA (60 Hz) |
| | 12 V | 199 mA | 170 mA | 20 Ω | 0.10 H | 0.17 H | | | | |
| | 24 V | 93.6 mA | 80 mA | 78 Ω | 0.38 H | 0.67 H | | | | |
| | 50 V | 46.8 mA | 40 mA | 350 Ω | 1.74 H | 2.88 H | | | | |
| | 100/110 V | 22.5/25.5 mA | 19/21.8 mA | 1,600 Ω | 10.5 H | 17.3 H | | | | |
| | 200/220 V | 11.5/13.1 mA | 9.8/11.2 mA | 6,700 Ω | 33.1 H | 57.9 H | | | | |
| DC | 6 V | 240 mA | | 25 Ω | 0.09 H | 0.21 H | | 10% min. | | 1.5 W |
| | 12 V | 120 mA | | 100 Ω | 0.39 H | 0.84 H | | | | |
| | 24 V | 69 mA | | 350 Ω | 1.41 H | 2.91 H | | | | |
| | 48 V | 30 mA | | 1,600 Ω | 6.39 H | 13.6 H | | | | |
| | 100/110 V | 15/15.9 mA | | 6,900 Ω | 32 H | 63.7 H | | | | |

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 temperatures 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.

■ Contact Ratings

| Relay | Single contact | | | | Bifurcated contacts | |
|---------------------------------|--------------------------------------|---|--------------------------------------|---|--------------------------------------|---|
| | 1-pole | | 2-, 3- or 4-pole | | 2-pole | |
| Load | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi=0.4$, L/R=7 ms) | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi=0.4$, L/R=7 ms) | Resistive load ($\cos\phi = 1$) | Inductive load ($\cos\phi=0.4$, L/R=7 ms) |
| Rated load | 110 VAC 15 A 24 VDC 15 A | 110 VAC 10 A 24 VDC 7 A | 110 VAC 10 A 24 VDC 10 A | 110 VAC 7.5 A 24 VDC 5 A | 110 VAC 5A 24 VDC 5 A | 110 VAC 4 A 24 VDC 4A |
| Rated carry current | 15 A | | 10 A | | 7 A | |
| Max. switching voltage | 250 VAC 125 VDC | | 250 VAC 125 VDC | | 250 VAC 125 VDC | |
| Max. switching current | 15 A | | 10 A | | 7 A | |
| Max. switching power | 1,700 VA 360 W | 1,100 VA 170 W | 1,100 VA 240 W | 825 VA 120 W | 550 VA 120 W | 440 VA 100 W |
| Failure rate (reference value)* | 100 mA, 5 VDC | | 100 mA, 5 VDC | | 10 mA, 5 VDC | |

*Note: P level: $\lambda_{60} = 0.1 \times 10^{-6}$ /operation, reference value

■ Characteristics

| Item | All except Relays with bifurcated contacts | Relays with bifurcated contacts |
|--------------------------|---|---------------------------------|
| Contact resistance | 50 mΩ max. | |
| Operate time | 25 ms max. | |
| Release time | 25 ms max. | |
| Max. operating frequency | Mechanical: 18,000 operations/hr Electrical: 1,800 operations/hr (under rated load) | |
| Insulation resistance | 100 MΩ min. (at 500 VDC) | |
| Dielectric strength | 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity 2,000 VAC, 50/60 Hz for 1 min between contacts of different polarity | |
| Vibration resistance | Destruction: 10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude) | |
| Shock resistance | Destruction: 1,000 m/s ² Malfunction: 200 m/s ² | |
| Endurance | Mechanical: AC: 50,000,000 operations min. (at 18,000 operations/hr) DC: 1,00,000,000 operations min. (at 18,000 operations/hr) Electrical: Single-, three-, and four-pole: 200,000 operations min. (at 1,800 operations/hr under rated load) Double-pole: 500,000 operations min. (at 1,800 operations/hr under rated load) | |
| Ambient temperature* | Operating: Single- and double-pole standard, bifurcated-contact Relays: -25°C to 55°C (with no icing) (-25°C to 70°C if carry current is 4 A or less) All other Relays: -25°C to 40°C (with no icing) (-25°C to 55°C if carry current is 4 A or less) | |
| Ambient humidity | Operating: 5% to 85% | |
| Weight | Single- and double-pole: approx. 40 g, three-pole: approx. 50 g, four-pole: approx. 70 g | |

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

2. The upper limit of 40°C for some Relays is because of the relationship between diode junction temperature and the element used.

■ Endurance Under Real Loads (reference only)

LY1

| Rated voltage | Load type | Conditions | Operating frequency | Electrical life |
|---------------|---------------------------|--|---------------------------|----------------------|
| 100 VAC | AC motor | 400 W, 100 VAC single-phase with 35-A inrush current, 7-A current flow | ON for 10 s, OFF for 50 s | 50,000 operations |
| | AC lamp | 300 W, 100 VAC with 51-A inrush current, 3-A current flow | ON for 5 s, OFF for 55 s | 100,000 operations |
| | | 500 W, 100 VAC with 78-A inrush current, 5-A current flow | | 25,000 operations |
| | Capacitor (2,000 μ F) | 24 VDC with 50-A inrush current, 1-A current flow | ON for 1 s, OFF for 6 s | 100,000 operations |
| | AC solenoid | 50 VA with 2.5-A inrush current, 0.25-A current flow | ON for 1 s, OFF for 2 s | 1,500,000 operations |
| | | 100 VA with 5-A inrush current, 0.5-A current flow | | 800,000 operations |

LY2

| Rated voltage | Load type | Conditions | Operating frequency | Electrical life |
|---------------|---------------------------|--|---------------------------|----------------------|
| 100 VAC | AC motor | 200 W, 100 VAC single-phase with 25-A inrush current, 5-A current flow | ON for 10 s, OFF for 50 s | 200,000 operations |
| | AC lamp | 300 W, 100 VAC with 51-A inrush current, 3-A current flow | ON for 5 s, OFF for 55 s | 80,000 operations |
| | Capacitor (2,000 μ F) | 24 VDC with 50-A inrush current, 1-A current flow | ON for 1 s, OFF for 15 s | 10,000 operations |
| | | 24 VDC with 20-A inrush current, 1-A current flow | | 150,000 operations |
| | AC solenoid | 50 VA with 2.5-A inrush current, 0.25-A current flow | ON for 1 s, OFF for 2 s | 1,000,000 operations |
| | | 100 VA with 5-A inrush current, 0.5-A current flow | | 500,000 operations |

LY4

| Rated voltage | Load type | Conditions | Operating frequency | Electrical life |
|---------------|---------------------------|--|---------------------------|----------------------|
| 100 VAC | AC motor | 200 W, 200 VAC triple-phase with 5-A inrush current, 1-A current flow | ON for 10 s, OFF for 50 s | 500,000 operations |
| | | 750 W, 200 VAC triple-phase with 18-A inrush current, 3.5 A current flow | | 70,000 operations |
| | AC lamp | 300 W, 100 VAC with 51-A inrush current, 3-A current flow | ON for 5 s, OFF for 55 s | 50,000 operations |
| | Capacitor (2,000 μ F) | 24 VDC with 50-A inrush current, 1-A current flow | ON for 1 s, OFF for 15 s | 5,000 operations |
| | | 24 VDC with 20-A inrush current, 1-A current flow | ON for 1 s, OFF for 2 s | 200,000 operations |
| | AC solenoid | 50 VA with 2.5-A inrush current, 0.25-A current flow | ON for 1 s, OFF for 2 s | 1,000,000 operations |
| | | 100 VA with 5-A inrush current, 0.5-A current flow | | 500,000 operations |

■ Approved Standards

UL 508 Recognitions (File No. 41643)

| No. of poles | Coil ratings | Contact ratings | Operations |
|--------------|------------------------------|---|---|
| 1 | 6 to 240 VAC 6 to 125 VDC | 15 A, 30 VDC (Resistive) 15 A, 240 VAC (General use) TV-5, 120 VAC 1/2 HP, 120 VAC | 6 x 10 ³ 25 x 10 ³ |
| 2 | | 15 A, 28 VDC (Resistive) 15 A, 120 VAC (Resistive) 12 A, 240 VAC (General use) 1/2 HP, 120 VAC | 6 x 10 ³ 25 x 10 ³ |
| 3 and 4 | | 10 A, 30 VDC (Resistive) 10 A, 240 VAC (General use) 1/3 HP, 240 VAC | 6 x 10 ³ |

CSA 22.2 No. 14 Listings (File No. LR31928)

| No. of poles | Coil ratings | Contact ratings | Operations |
|--------------|------------------------------|---|---|
| 1 | 6 to 240 VAC 6 to 125 VDC | 15 A, 30 VDC (Resistive) 15 A, 120 VAC (General use) 1/2 HP, 120 VAC TV-5, 120 VAC | 6 x 10 ³ 25 x 10 ³ |
| 2 | | 15 A, 30 VDC (Resistive) 15 A, 120 VAC (Resistive) 1/2 HP, 120 VAC TV-3, 120 VAC | 6 x 10 ³ |
| 3 and 4 | | 10 A, 30 VDC (Resistive) 10 A, 240 VAC (General use) | |

SEV Listings (File No. D3,31/137)

| No. of poles | Coil ratings | Contact ratings | Operations |
|--------------|------------------------------|-------------------------------|---------------------|
| 1 | 6 to 240 VAC 6 to 125 VDC | 15 A, 24 VDC 15 A, 220 VAC | 6 x 10 ³ |
| 2 to 4 | | 10 A, 24 VDC 10 A, 220 VAC | |

TÜV (File No. R9251226) (IEC255)

| No. of poles | Coil ratings | Contact ratings | Operations |
|--------------|------------------------------|--|-----------------------|
| 1 to 4 | 6 to 125 VDC 6 to 240 VAC | LY1, LY1-FD 15 A, 110 VAC (cosφ=1) 10 A, 110 VAC (cosφ=0.4) LY2, LY2-FD, LY3, LY3-FD, LY4, LY4-FD 10 A, 110 VAC (cosφ=1) 7.5 A, 110 VAC (cosφ=0.4) | 100 x 10 ³ |

VDE Recognitions (No. 9903UG and 9947UG)

| No. of poles | Coil ratings | Contact ratings | Operations |
|--------------|---|--|-----------------------|
| 1 | 6, 12, 24, 50, 110, 220 VAC 6, 12, 24, 48, 110 VDC | 10 A, 220 VAC (cosφ=1) 7 A, 220 VAC (cosφ=0.4) 10 A, 28 VDC (L/R=0 ms) 7 A, 28 VDC (L/R=7 ms) | 200 x 10 ³ |
| 2 | | 7 A, 220 VAC (cosφ=1) 4 A, 220 VAC (cosφ=0.4) 7 A, 28 VDC (L/R=0 ms) 4 A, 28 VDC (L/R=7 ms) | |

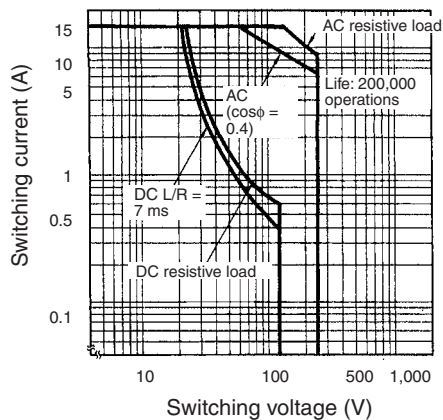
LR Recognitions (No. 563KOB-204523)

| No. of poles | Coil ratings | Contact ratings |
|--------------|------------------------------|--|
| 2, 4 | 6 to 240 VAC 6 to 110 VDC | 7.5 A, 230 VAC (PF0.4) 5 A, 24 VDC (L/R=7 ms) |

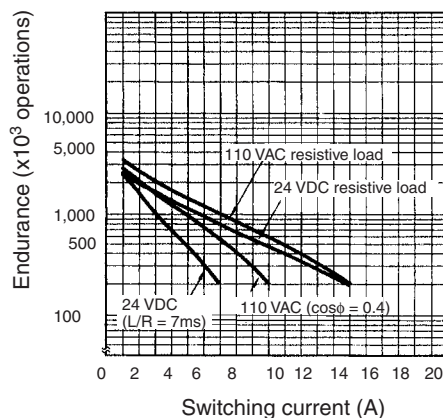
Engineering Data

LY1

Maximum Switching Power

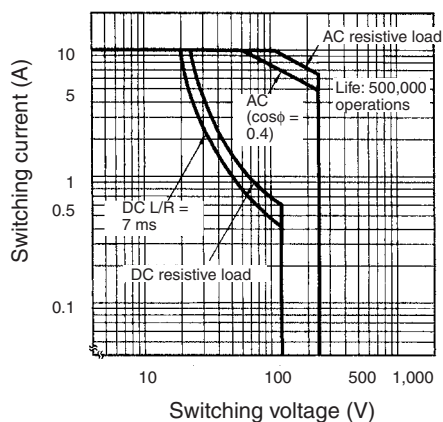


Endurance

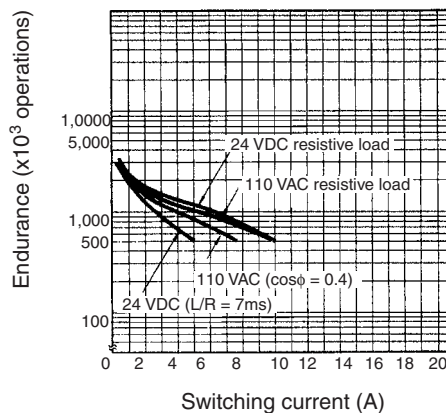


LY2

Maximum Switching Power

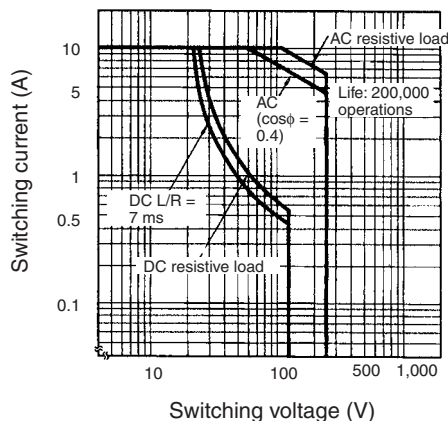


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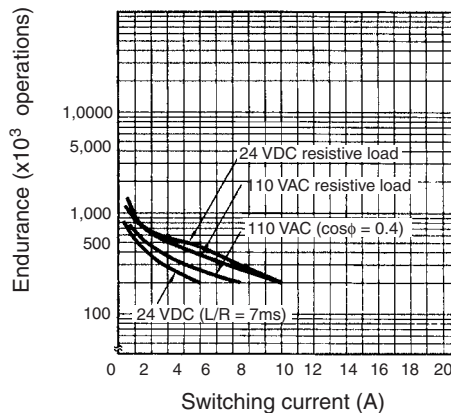


LY3 and LY4

Maximum Switching Power

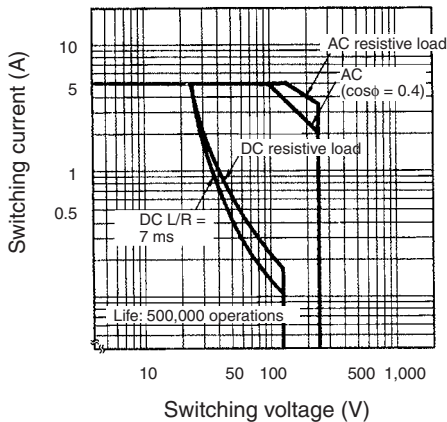


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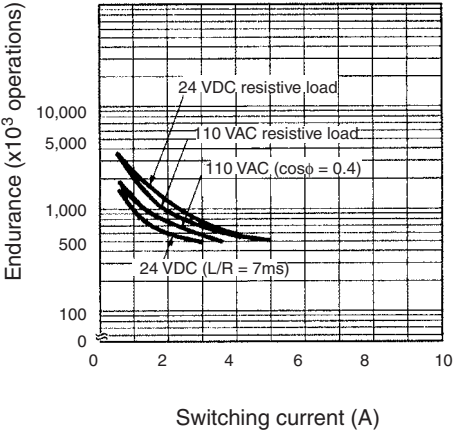


LY2Z

Maximum Switching Power



Endurance

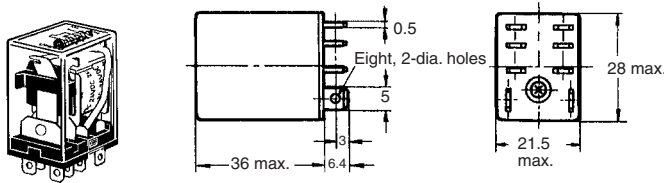


Dimensions

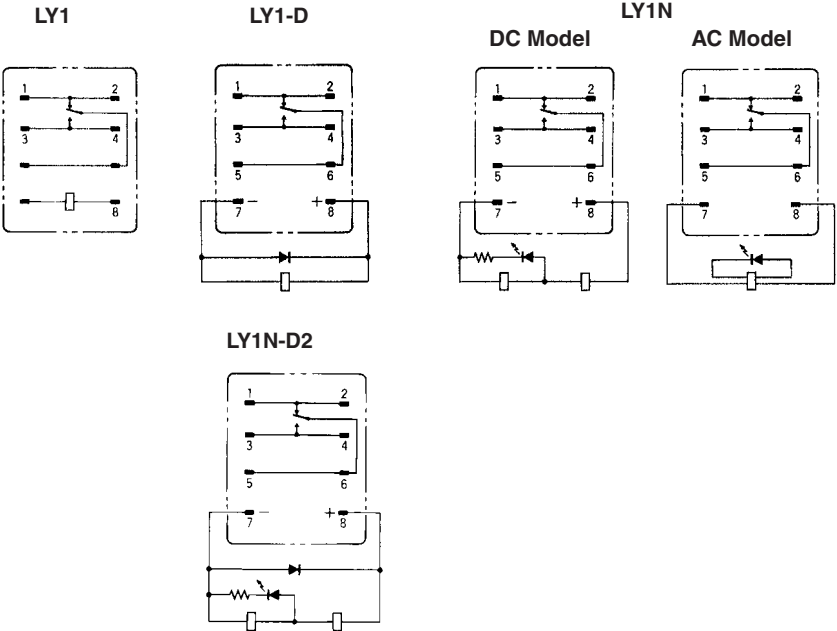
Note: All units are in millimeters unless otherwise indicated.

Relays with Solder/Plug-in Terminals

LY1
LY1N (-D2)
LY1-D



Terminal Arrangement/Internal Connections (Bottom View)

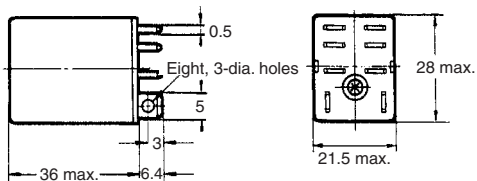
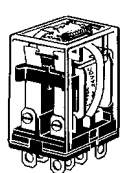


Note: The DC models have polarity.

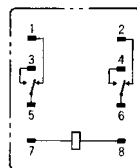
LY2
LY2-D
LY2N
LY2N-D2

LY2Z
LY2Z-D
LY2ZN
LY2ZN-D2

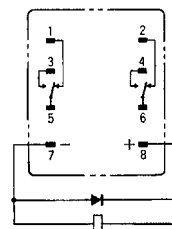
Terminal Arrangement/Internal Connections (Bottom View)



LY2(Z)

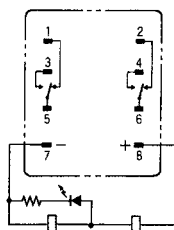


LY2(Z)-D

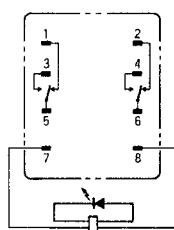


LY2(Z)N

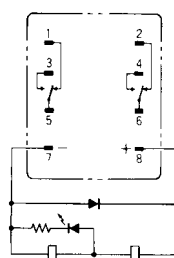
DC Model



AC Model

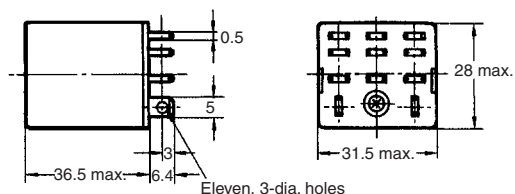
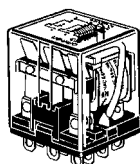


LY2(Z)N-D2



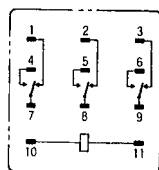
Note: The DC models have polarity.

LY3Z
LY3N
LY3-D

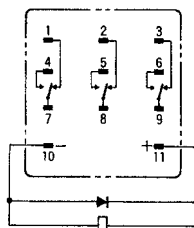


Terminal Arrangement/Internal Connections (Bottom View)

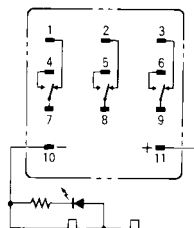
LY3



LY3-D

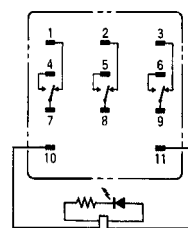


DC Model



LY3N

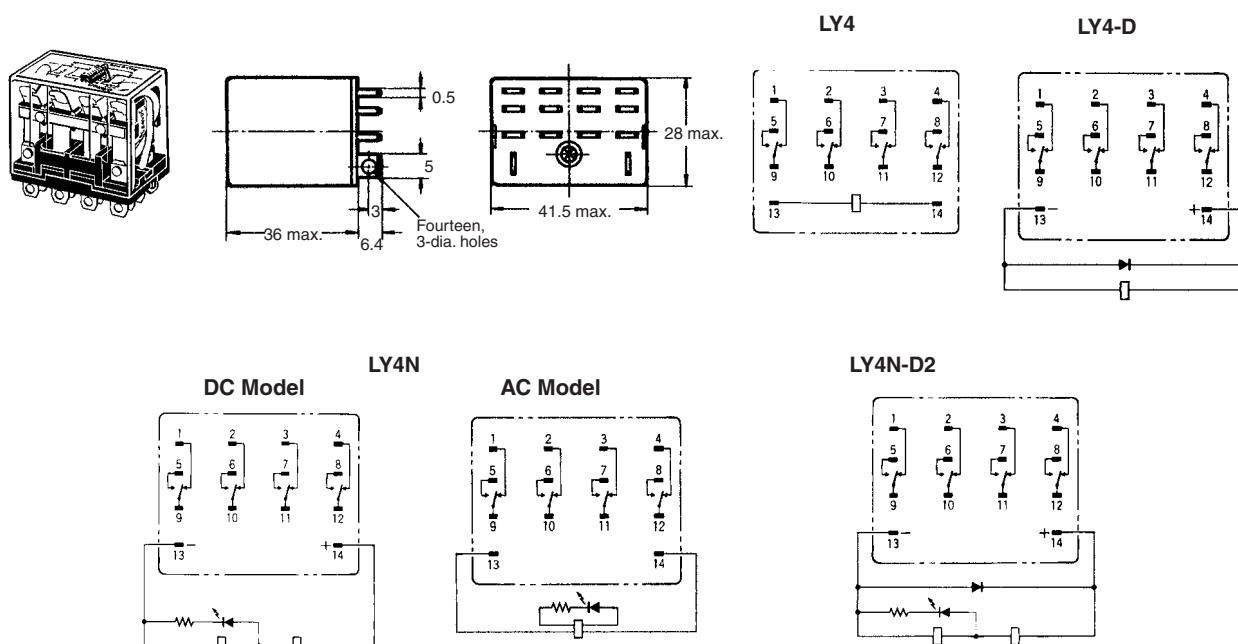
AC Model



Note: The DC models have polarity.

| LY4 | LY4N |
|-------|---------|
| LY4-D | LY4N-D2 |

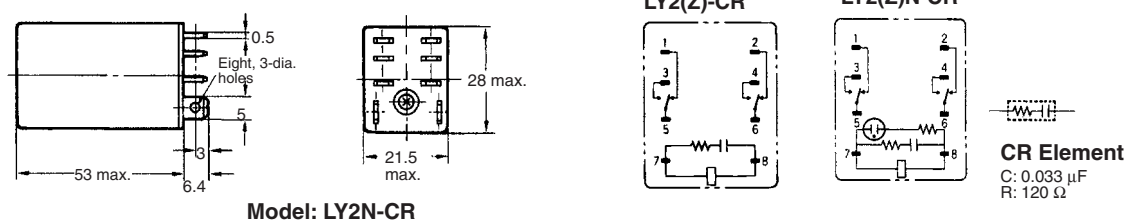
Terminal Arrangement/Internal Connections (Bottom View)



Note: The DC models have polarity.

LY2-CR
LY2Z-CR
LY2N-CR
LY2ZN-CR

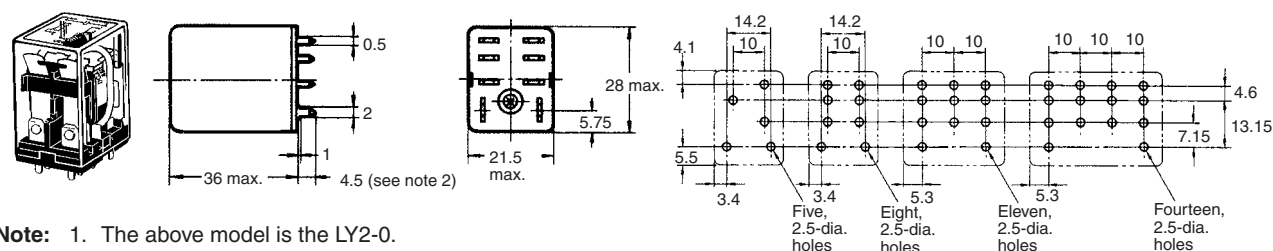
Terminal Arrangement/Internal Connections (Bottom View)



Relays with PCB Terminals

LY1-0 LY3-0
LY2-0 LY4-0

PC Board Holes (Bottom View)



Note:

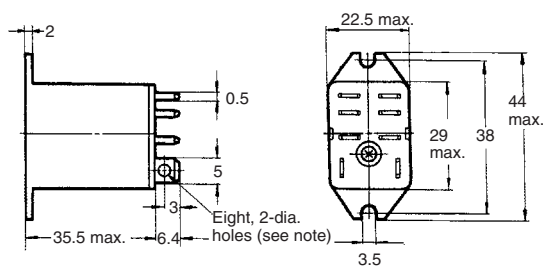
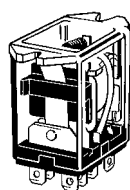
1. The above model is the LY2-0.
2. This figure is 6.4 for the LY1-0

Note:

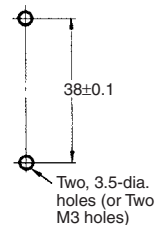
1. The tolerance for the above figures is 0.1 mm.
2. Besides the terminals, some part of the LY1-0 carries current. Due attention should be paid when mounting the LY1-0 to a double-sided PC board.

Upper-mounting Relays

LY1F
LY2F

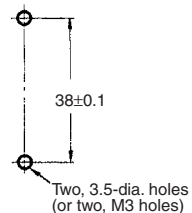
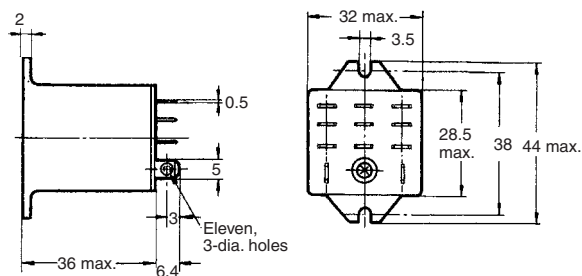
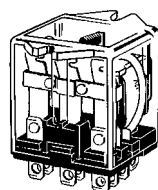


Mounting Holes

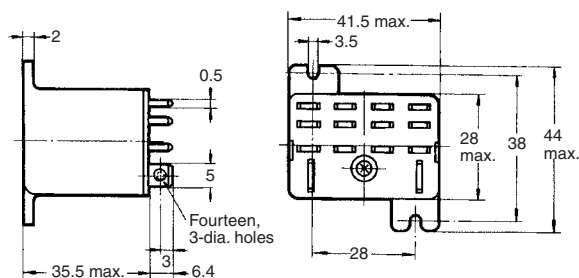
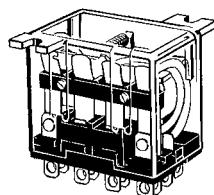


Note: 1. Eight 3-dia. holes should apply to the LY2F model.

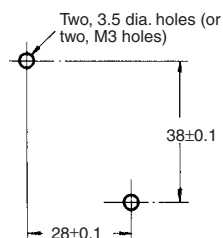
LY3F



LY4F

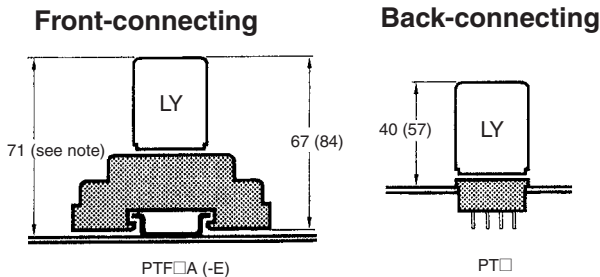


Mounting holes



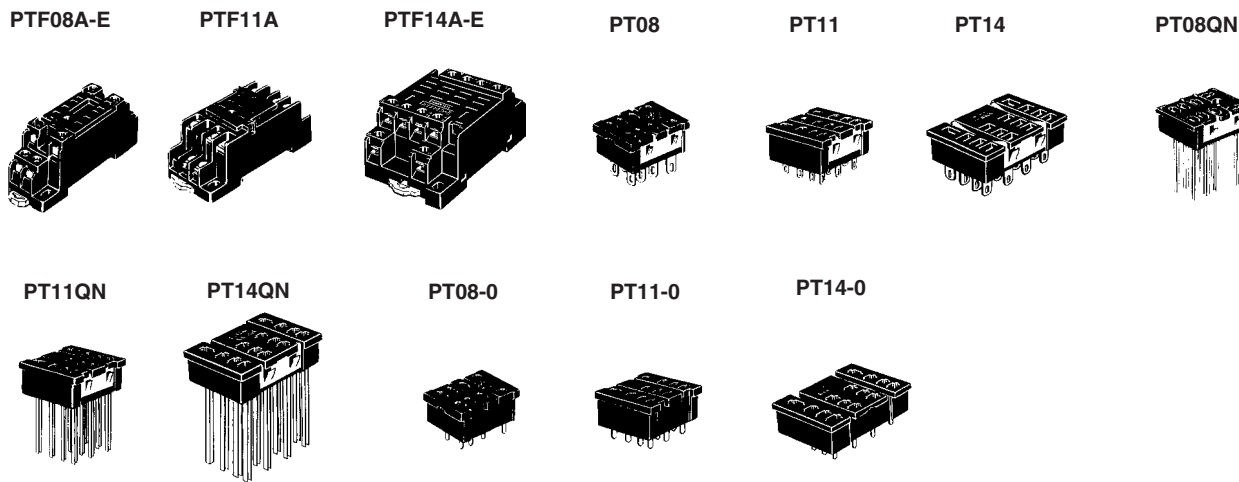
Mounting Height with Socket

The following Socket heights should be maintained.

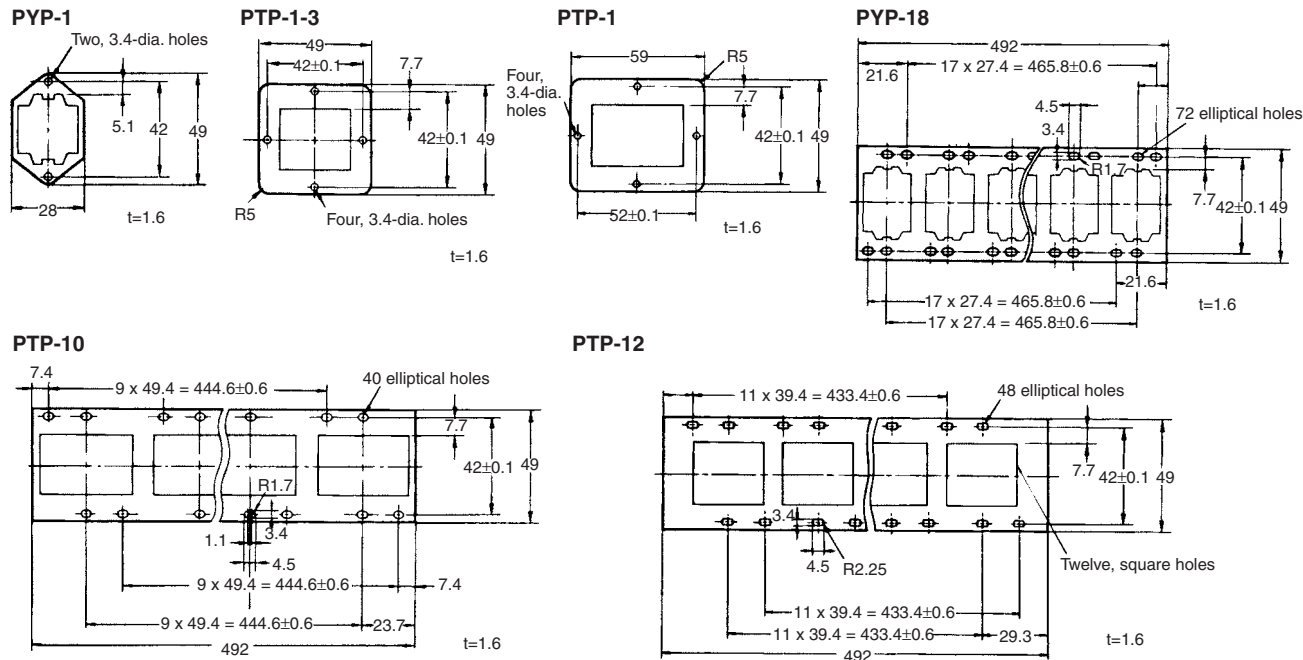


- Note:**
1. The PTF□A (-E) can be track-mounted or screw-mounted.
 2. For the LY□-CR (CR circuit built-in type) model, this figure should be 88.

Sockets

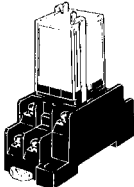

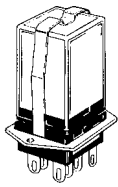
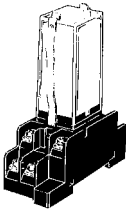



Mounting Plates for Back-connecting



■ Hold-down Clips

Hold-down clips are used to hold Relays to Sockets and prevent them from coming loose due to vibration or shock.

| Used with Socket | | Used with Socket mounting plate | For CR circuit built-in Relay | |
|---|---|---|--|---|
| PYC-A1 | PYC-P | PYC-S | Y92H-3 | PYC-1 |
|  |  |  |  |  |

Precautions

Refer to page 11 for general precautions.

■ Connections

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

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.