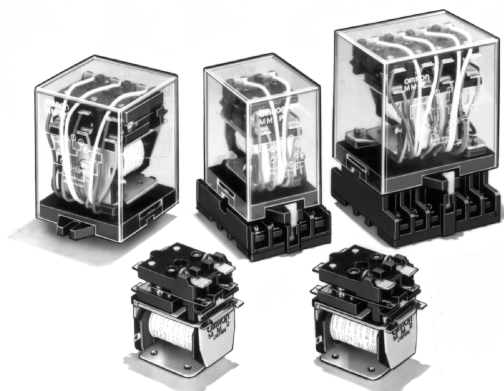


### Stable Contact Reliability and Long Life

- Easy to mount, wire, and use.
- A large selection of models including various contact forms, DC-switching models, and open models.
- Mechanical life: 5,000,000 operations; electrical life (under rated load): 500,000 operations.
- Models also available with built-in diodes and for use as auxiliary power relays.



### Ordering Information

Type	Contact form	Open structure		Cased
		Solder terminals	Screw terminals	Plug-in (octal pins) terminals
Standard	DPDT	MM2	MM2B	MM2P
	3PDT	MM3	MM3B	MM3P
	4PDT	MM4	MM4B	MM4P
DC-switching	DPDT	MM2X	MM2XB	MM2XP
	3PDT	MM3X	MM3XB	MM3XP
	4PDT	MM4X	MM4XB	MM4XP
With built-in diode	DPDT	---	---	MM2P-D
	4PDT	---	---	MM4P-D
DC-switching with built-in diode	DPDT	---	---	MM2XP-D
	4PDT	---	---	MM4XP-D
With operation indicator	DPDT	---	---	MM2PN
	3PDT	---	---	MM3PN
	4PDT	---	---	MM4PN
DC-switching with operation indicator	DPDT	---	---	MM2XPN
	3PDT	---	---	MM3XPN
	4PDT	---	---	MM4XPN
Conforming to auxiliary power relay specifications	4PDT	---	---	MM4P-JD
		---	---	MM4XP-JD

## Models Conforming to Auxiliary Power Relay Specifications

The MM4P-JD and MM4XP-JD satisfy the ratings of auxiliary relays provided in JEC-2500 (1987) standards for power protective relays specified by the Japan Electromechanical Commission. Furthermore, the MM4P-JD and MM4XP-JD satisfy the ratings of multi-contact relays provided in JEC-174D (1979) standards for power auxiliary relays.

These models work at operation level B specified by JEC-174D (1979) standards and the hot start of the relays is possible after the coils radiate heat.

In accordance with JEC-2500 (1987) standards, the coil of each model withstands a 130% DC load or 115% AC load.

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

Example: MM2, 6 VAC  
Rated coil voltage

2. Latching Relays based on the MM Series are also available. Refer to the MMK.

3. Models with built-in varistors (AC operation) are also available in addition to those with built-in diodes. Ask your OMRON representative for details.

## Model Number Legend

MM j j j j -j  
1 2 3 4 5

### 1. Contact Form

- 2: DPDT
- 3: 3PDT
- 4: 4PDT

### 2. Type (See Note)

- None: Standard
- X: DC-switching

### 3. Terminal Shape

- None: Solder
- B: Screw
- P: Plug-in

### 4. Operation Indicator

- None: Not provided
- N: Provided

### 5. Built-in Diode

- None: Not provided
- D: Provided

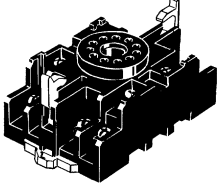

**Note:** The suffix "JD" indicates models conforming to auxiliary power relay specifications.

## ■ Accessories (Order Separately)

### Mounting Brackets

Mounting Bracket (S bracket)	R99-03MM
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### Sockets

Relay model	DIN Track/Front-connecting Socket (screw terminals)	Back-connecting Socket (solder terminals)
MM2(X)P(-D)	8PFA	PL08
MM3P	11PFA 	PL11 
MM3XP, MM4(X)P(-D)	14PFA	PL15
MM4(X)P-JD	14PFA	---

# Specifications

## ■ Coil Ratings

### Open Coils (with Solder or Screw Terminals)

	Rated voltage (V)	Rated current (mA)				Coil resistance (Ω)		Must-operate voltage	Must-release voltage	Max. voltage	Power consumption (VA or W)	
		DP		3P or 4P		DP	3P or 4P				Initial	Rated
		50 Hz	60 Hz	50 Hz	60 Hz							
AC	6	790	655	1,120	950	1.1	0.5	80% max.	30% min. (60 Hz) 25% min. (50 Hz)	110%	Approximately 4.1 (DP)	Approximately 3.9 (DP)
	12	395	325	560	480	4.7	2.0				Approximately 6.3 (3P or 4P)	Approximately 5.7 (3P or 4P)
	24	195	160	280	240	19	8.5					
	50	94	78	134	114	82	36					
	100/(110)	47	39/45	67	57/66	340	150					
	200/(220)	23.5	19.5/22.5	33.5	28.5/33	1,540	620					
DC	6	340		450		17.5	13.4	70% max.	10% min.		Approximately 2.1 (DP)	
	12	176		220		68	54				Approximately 2.7 (3P or 4P)	
	24	87		94		275	255					
	48	41		52		1,180	930					
	100/110	17/19		22/24.5		5,750	4,500					
	200/220	8.6/9.5		11/12		23,200	18,000					

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–20% for AC rated current and ±15% for DC coil resistance.
  2. The AC coil resistance values are reference values.
  3. Performance characteristic data are measured at a coil temperature of 23°C.
  4. The maximum voltage is one that is applicable instantaneously to the Relay coil at an ambient temperature of 23°C and not continuously.

### Covered Coils (Plug-in Terminals)

The rated current may vary if the Relay has a built-in operating indicator (see note 4).

	Rated voltage (V)	Rated current (mA)				Coil resistance (Ω)		Coil inductance (H)				Must-operate voltage	Must-release voltage	Max. voltage	Power consumption (VA or W)	
		DP		3P or 4P		DP	3P or 4P	DP		3P or 4P					Initial	Rated
		50 Hz	60 Hz	50 Hz	60 Hz			Contact release	Contact operate	Contact release	Contact operate					
AC	6	690	590	975	850	1.1	0.5	0.02	0.02	0.01	0.03	80% max.	30% min. (60 Hz) 25% min. (50 Hz)	110%	Approx. 4.1 VA (DP)	Approx. 3.5 VA (DP)
	12	345	295	490	430	4.7	2.0	0.07	0.01	0.04	0.07				Approx. 6.3 VA (3P or 4P)	Approx. 5.1 VA (3P or 4P)
	24	170	145	245	210	19	8.5	0.28	0.41	0.18	0.28					
	50	82	70	117	102	82	36	1.2	1.7	0.75	1.2					
	100/(110)	41	35/40	58.5	51/58	340	150	4.8	6.7	3	4.5					
	200/(220)	20.5	17.5/20	29	25.5/29	1,540	620	20	25.6	12	19					
DC	6	340		450		17.5	13.4	0.2	0.36	0.23	0.35	70% max.	10% min.		Approx. 2.1 W (DP)	
	12	176		220		68	54	0.74	1.0	0.87	1.4				Approx. 2.7 W (3P or 4P)	
	24	87		94		275	255	4.2	5.8	5.6	9.2					
	48	41		52		1,180	930	20.4	26	27.3	45.5					
	100/110	17/19		22/24.5		5,750	4,500	81.6	92.5	61.4	96.5					
	200/220	8.6/9.5		11/12		23,200	18,000	340	380	158	250					

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–20% for AC rated current and ±15% for DC coil resistance.
  2. The AC coil resistance and coil inductance values are for reference only.
  3. Performance characteristic data are measured at a coil temperature of 23°C.
  4. The maximum voltage is one that is applicable instantaneously to the Relay coil at an ambient temperature of 23°C and not continuously.
  5. The rated current of a model with a built-in LED indicator at 6, 12, 24, or 50 VAC or 6, 12, 24, or 48 VDC increases by approximately 10 mA due to the current consumption of the LED. The rated current of a model with a built-in neon lamp indicator at 100 (110) or 200 (220) VAC or 100/110 or 200/220 VDC increases by approximately 0.2 mA due to the current consumption of the neon lamp.

### Coils (Conforming to Auxiliary Power Relay Specifications)

Rated voltage (V)	Rated current (mA)		Coil resistance ( $\Omega$ )	Coil inductance (H)		Must-operate voltage	Must-release voltage	Max. voltage	Operation level (JEC-17 4D)	Power consumption (VA or W)		
	50 Hz	60 Hz		Contact release	Contact operate					% of rated voltage		Initial
AC	24	245	210	8.5	0.18	0.28	80% max.	30% min. (60 Hz) 25% min. (50 Hz)	110%	B Hot start after coil heated	Approx. 6.3 VA	Approx. 5.1 VA
	50	117	102	36	0.75	1.2						
	100/(110)	58.5	51/58	150	3	4.5						
	110	53	46	182	3.6	5.5						
	115	51	44	210	4	6.2						
	200/(220)	29	25.5/29	620	12	19						
	220	26.5	23	780	15	21						
DC	24	94	255	5.6	9.2	70% max.	10% min.			Approx. 2.7 W		
	48	52	930	27.3	45.5							
	100/110	22/24.5	4,500	61.4	96.5							
	125	22	5,800	90	130							
	200/220	11/12	18,000	158	250							

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for AC rated current and  $\pm 15\%$  for DC coil resistance.
  2. The AC coil resistance and coil inductance values are for reference only.
  3. Performance characteristic data are measured at a coil temperature of 23°C.
  4. The maximum voltage is one that is applicable instantaneously to the Relay coil at 23°C and not continuously.

### ■ Contact Ratings

#### Standard Relays

Item	Open Relays		Covered Relays	
	MM2(B), MM3(B), MM4(B)		MM2P(N, D), MM3P(N), MM4P(N, D)	
	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)
Contact type	Single			
Contact material	Ag			
Rated load	15 A at 220 VAC 10 A at 24 VDC		7.5 A at 220 VAC 5 A at 24 VDC	
Rated carry current	15 A		7.5 A	
Max. switching voltage	250 VAC, 250 VDC		250 VAC, 250 VDC	
Max. switching current	15 A		7.5 A	

#### DC-switching Relays/Built-in Diode Relays

Item	Open Relays		Covered Relays	
	MM2X(B), MM3X(B), MM4X(B)		MM2XP(-D), MM3XP, MM4XP(-D)	
	Resistive load ( $\cos\phi = 1$ )	Inductive load (L/R=7 ms)	Resistive load ( $\cos\phi = 1$ )	Inductive load (L/R=7 ms)
Contact type	Single			
Contact material	Ag			
Rated load	10 A at 110 VDC	7 A at 110 VDC	7 A at 110 VDC	6 A at 110 VDC
Rated carry current	15 A		7.5 A	
Max. switching voltage	250 VDC		250 VDC	
Max. switching current	15 A		7.5 A	

- Note:**
1. When switching DC inductive loads at 125 V or more, an unstable region exists for a contact current of between 0.5 and 2.5 A. The Relay will not turn OFF in this region. Use a contact current of 0.5 A or less when switching 125 VDC or more.
  2. If L/R exceeds 7 ms when switching DC inductive loads, an arc-breaking time of up to 50 ms must be considered in application and the circuit must be designed to ensure that an arc-breaking time of 50 ms is not exceeded.

### Contacts (Conforming to Auxiliary Power Relay Specifications)

Item	MM4P-JD		MM4XP-JD	
	Resistive load	Inductive load ( $\cos\phi = 0.4$ , L/R = 7 ms)	Resistive load	Inductive load ( $\cos\phi = 0.4$ , L/R = 7 ms)
Contact type	Single			
Contact material	Ag			
Rated load	5 A at 220 VAC, 5 A at 24 VDC		5 A at 110 VDC	
Rated carry current	5 A			
Max. switching voltage	250 VAC, 250 VDC			
Max. switching current	5 A			

- Note:**
1. A model for DC loads is not in stable operation when switching an inductive load within a operating current range between 0.5 and 2.5 A at a minimum of 125 VDC, where the load cannot be switched.
  2. A model for DC loads can switch an inductive load with an L/R of 7 ms or greater on condition that the maximum arc shutoff time is 50 ms. Be sure to design the circuit so that the maximum arc shutoff time will not exceed 50 ms.

## ■ Characteristics

### Standard Relays

Item	Open Relays	Covered Relays
Contact resistance (see note 2)	25 mΩ max.	50 mΩ max.
Operate time (see note 3)	AC: 25 ms max. DC: 50 ms max.	
Release time (see note 3)	30 ms max. (100 ms max. for Built-in Diode Relays)	
Max. operating frequency	Mechanical: 7,200 operations/hr Electrical: 1,800 operations/hr (under rated load)	
Insulation resistance (see note 4)	100 MΩ min. (at 500 VDC)	
Dielectric strength	1,500 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 (and between coil and contacts)	
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude Malfunction: 10 to 55 Hz, 1.0-mm double amplitude	
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> Malfunction: 100 m/s <sup>2</sup>	
Life expectancy	Mechanical: 5,000,000 operations min. (at 7,200 operations/hr) Electrical: 500,000 operations min. (at 1,800 operations/hr under rated load) (see note 5)	
Error rate (level P) (Reference value) (see note 6)	10 mA at 5 VDC	
Ambient temperature	Operating: -10°C to 55°C (with no icing or condensation) Storage: -25°C to 55°C (with no icing or condensation)	
Ambient humidity	Operating: 35% to 85% Storage: 35% to 85%	
Weight	Standard models: MM2 approx. 160 g MM3 approx. 270 g MM4 approx. 300 g MM2P approx. 220 g MM3P approx. 360 g MM4P approx. 410 g	DC-switching models MM2X approx. 165 g MM3X approx. 275 g MM4X approx. 310 g MM2XP approx. 225 g MM3XP approx. 395 g MM4XP approx. 420 g

- Note:**
1. The data shown above are initial values.
  2. The contact resistance was measured with 1 A at 5 VDC using the voltage drop method.
  3. The operate or release time was measured with the rated voltage imposed with any contact bounce ignored at an ambient temperature of 23°C.
  4. The insulation resistance was measured with a 500-VDC megger applied to the same places as those used for checking the dielectric strength.
  5. The electrical life expectancy was measured at an ambient temperature of 23°C.
  6. This value was measured at a switching frequency of 60 operations per minute.

Relays (Conforming to Auxiliary Power Relay Specifications)

Item	Covered Relays
Contact resistance (see note 2)	50 mΩ max.
Operate time (see note 3)	AC: 25 ms max., DC: 50 ms max.
Release time (see note 3)	30 ms max.
Max. operating frequency	Mechanical: 1,800 operations/hr Rated load: 1,800 operations/hr
Insulation resistance (see note 4)	100 MΩ min.
Dielectric strength	Between coil and contact: 2,000 VAC, 50/60 Hz for 1 minute Between contacts of different polarities: 2,000 VAC, 50/60 Hz for 1 minute Between contacts of same polarity 1,500 VAC, 50/60 Hz for 1 minute
Vibration resistance	Destruction: 10 to 55 Hz, 0.75-mm double amplitude Malfunction: 10 to 22 Hz, 1-mm double amplitude
Shock resistance	Destruction: 300 m/s <sup>2</sup> Malfunction: 30 m/s <sup>2</sup>
Life expectancy	Mechanical: 5,000,000 operations min. (at 1,800 operations/hr) Electrical: 500,000 operations min. (at 1,800 operations/hr with rated load) (see note 5)
Error rate (level P) (Reference value) (see note 6)	10 mA at 5 VDC
Ambient temperature	Operating: -10°C to 40°C (with no icing or condensation) Storage: -25°C to 55°C (with no icing or condensation)
Ambient humidity	Operating: 35% to 85% Storage: 35% to 85%
Weight	MM4P-JD: approx. 410 g MM4XP-JD approx. 420 g

- Note:**
- The data shown above are initial values.
  - The contact resistance was measured with 1 A at 5 VDC using the voltage drop method.
  - The operate or release time was measured with the rated voltage imposed with any contact bounce ignored at an ambient temperature of 23°C.
  - The insulation resistance was measured with a 500-VDC megger applied to the same places as those used for checking the dielectric strength.
  - The electrical life expectancy was measured at an ambient temperature of 23°C.
  - This value was measured at a switching frequency of 60 operations per minute.

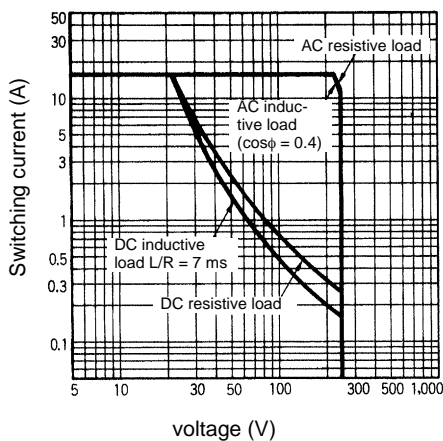
Engineering Data

■ Standard Relays

Maximum Switching Power

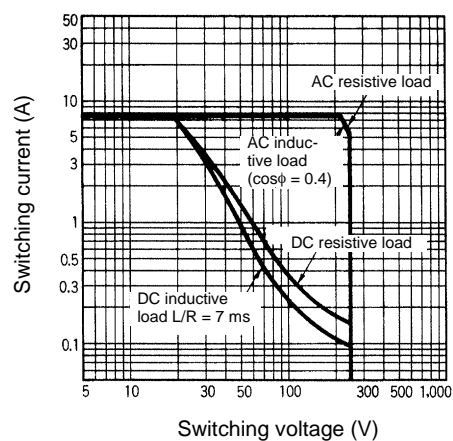
Open Relays

MMj (B)

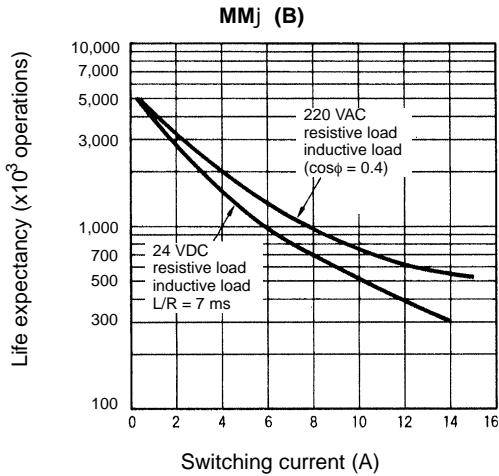


Cased Relays

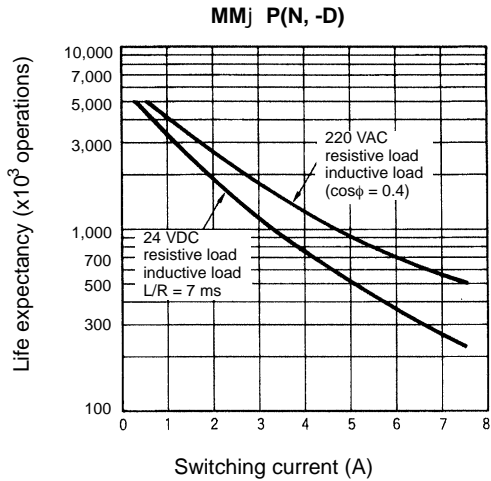
MMj P(N, -D)



**Life Expectancy  
Open Relays**

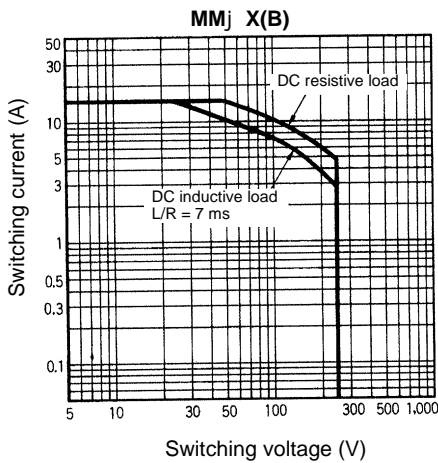


**Cased Relays**

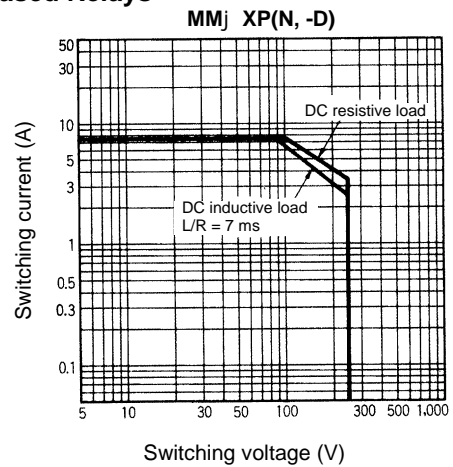


■ **DC-switching Relays**

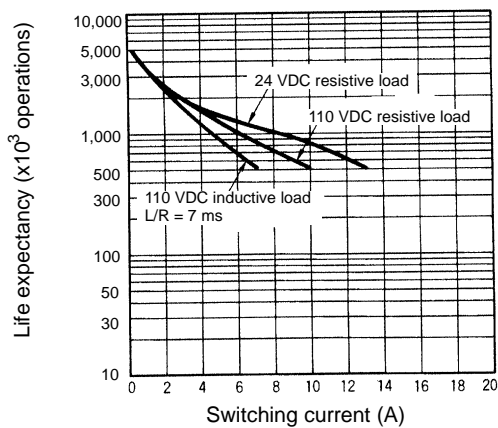
**Maximum Switching Power  
Open Relays**



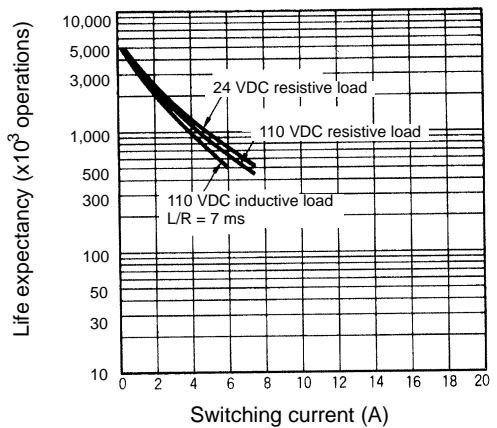
**Cased Relays**



**Life Expectancy  
Open Relays**



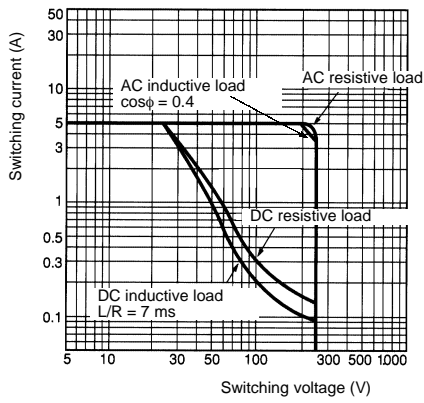
**Cased Relays**



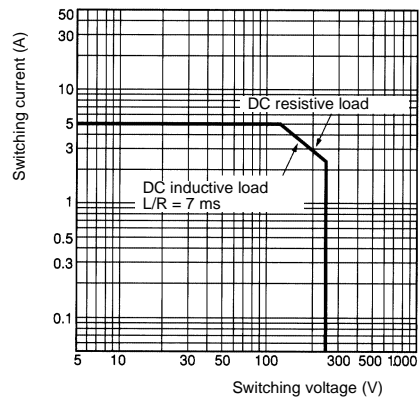
■ Relays Conforming to Auxiliary Power Relay Specifications

**Maximum Switching Power**

**MM4P-JD**

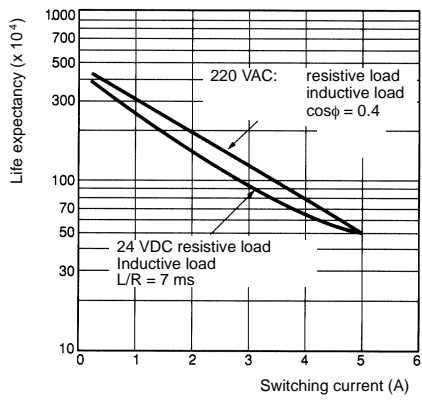


**MM4XP-JD**

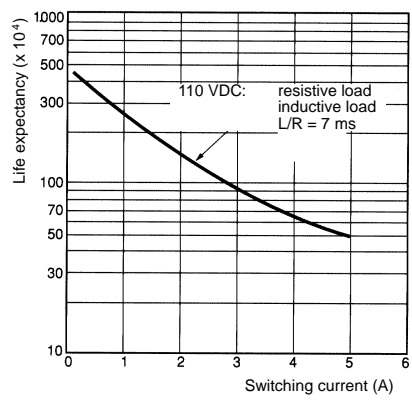


**Life Expectancy Curve**

**MM4P-JD**



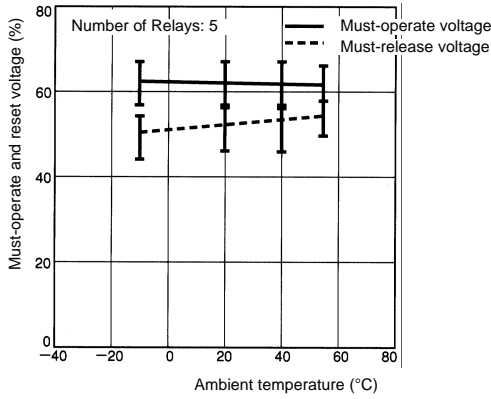
**MM4XP-JD**



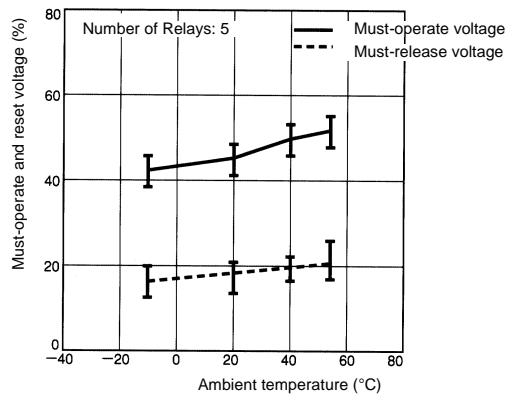


**Ambient Temperature vs. Must-operate and Must-release Voltage**

**MM2P AC (60 Hz)**

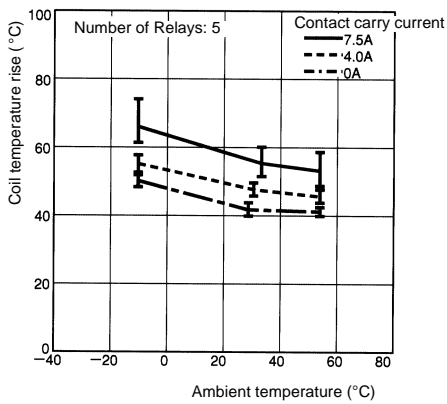


**MM2P DC**

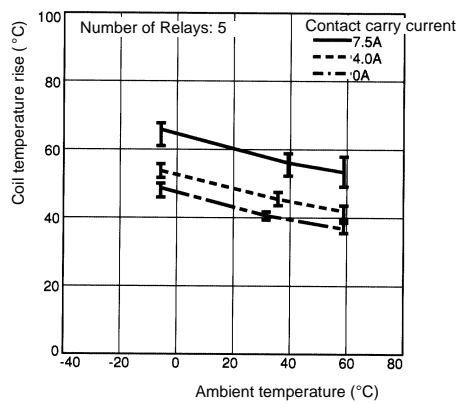


**Ambient Temperature vs. Coil Temperature Rise**

**MM2P 110 VAC (60 Hz)**

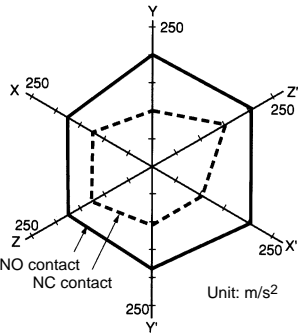


**MM2P DC**



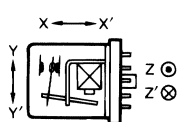
**Malfunctioning Shock**

**MM2P AC**



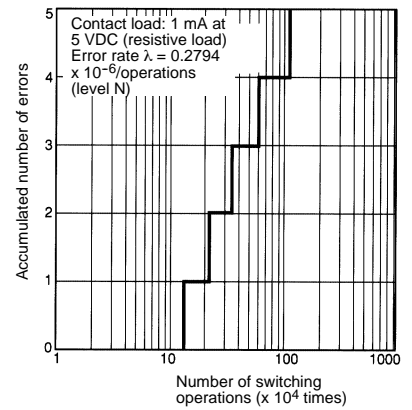
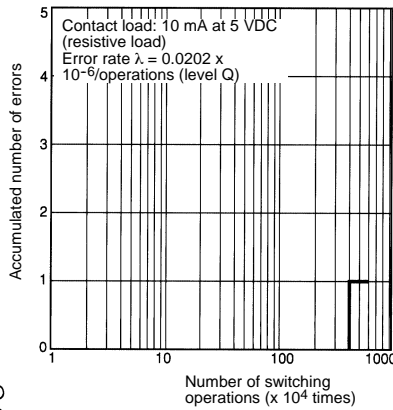
Number of samples: 5  
Measurement conditions: Impose a shock of 50 m/s<sup>2</sup> in the ±X, ±Y, and ±Z directions three times each with the Relay energized and not energized to check the shock values that cause the Relay to malfunction.

Shock direction



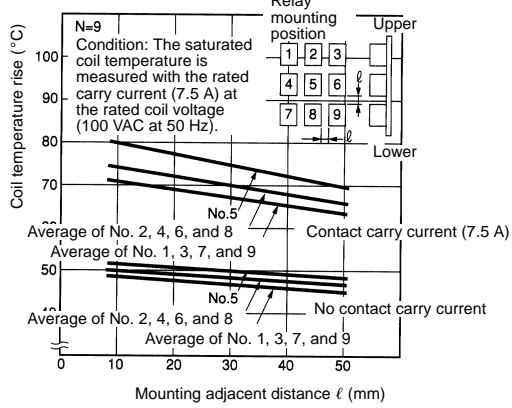
**Contact Reliability (Improved Allen-Bradley Test Circuit)**

**MM4P 24 VDC**



### Relay Mounting Adjacent Distance vs. Coil Temperature Rise

#### MM4P 100 J(110) VAC



## Dimensions

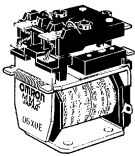
Note: All units are in millimeters unless otherwise indicated.

### Standard Relays

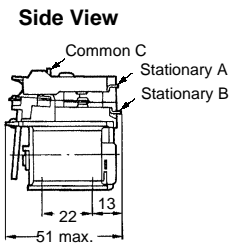
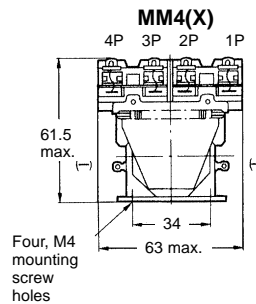
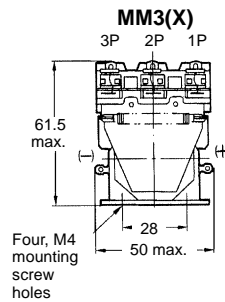
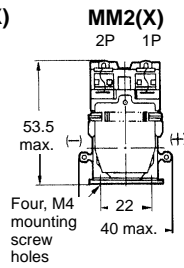
#### Open Relays

#### Solder Terminals

#### MM2(X), MM4(X), MM3(X)



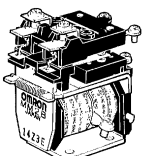
MM2



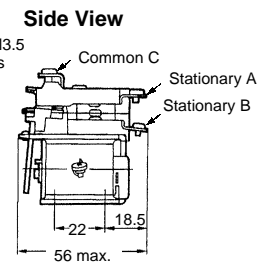
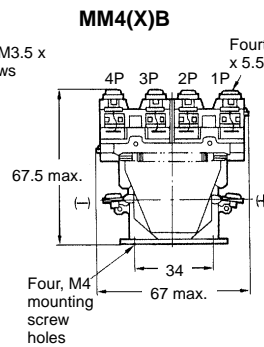
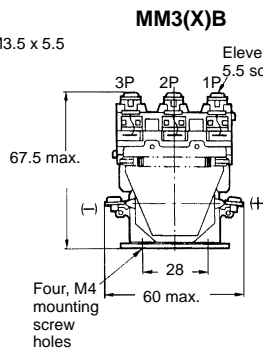
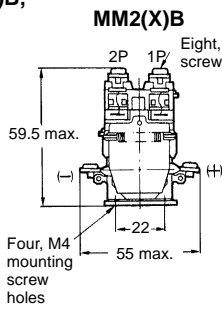
Note: Connect the common (C) of MMj X to positive (+).

#### Screw Terminals

#### MM2(X)B, MM3(X)B, MM4(X)B



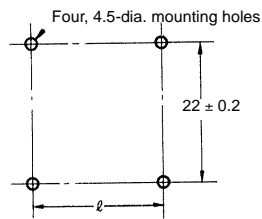
MM2B



Note: Connect the common (C) of MMj XB to positive (+).

**Mounting Holes  
(Bottom View)**

Direct mounting

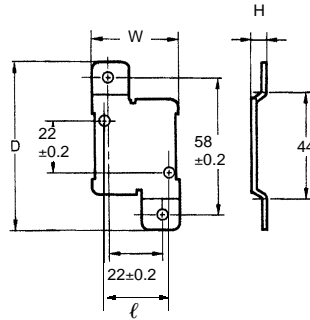
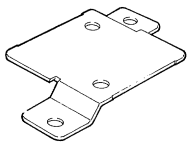


Length of  $\ell$   
 DPDT:  $22 \pm 0.2$   
 3PDT:  $28 \pm 0.2$   
 4PDT:  $34 \pm 0.2$

**Mounting Bracket (S Bracket)**

**R99-03MMj**

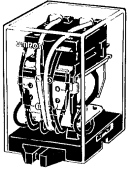
The S Bracket can be used to mount a Relay with open solder or screw terminals.



	R99-03MM2 (DPDT)	R99-03MM3 3PDT, 4PDT
$\ell$	22	28, 34
D	71 max.	71 max.
W	36 max.	46 max.
H	6 max.	6 max.

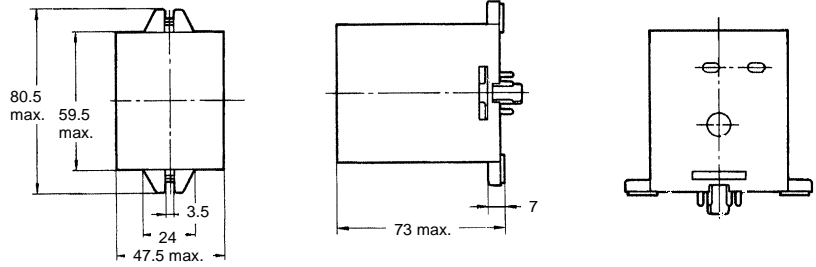
Cased Relays

Plug-in Terminals



MM2P

MM2P(N, D)  
MM2XP(N, -D)

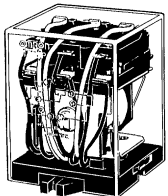


**Note:** As shown in the diagram, there are three 10-dia. holes in the side of the case for the MM2XP(N, D). When a case-protection plate is attached, the width of the Relay will be 48 mm max.

Terminal Arrangement

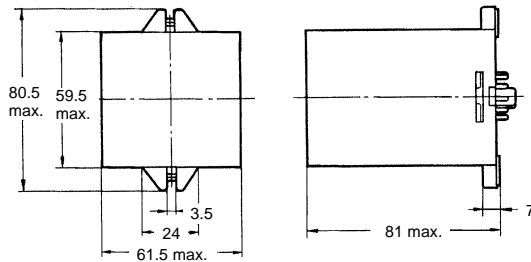
<p><b>MM2P</b></p>	<p><b>MM2P-D</b></p>	<p><b>MM2PN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM2PN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM2PN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>
<p><b>MM2XP</b></p>	<p><b>MM2XP-D</b></p>	<p><b>MM2XPN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM2XPN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM2XPN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>

**Note:** Wire the terminals correctly with no mistakes in coil polarity.



MM3P

MM3P(N)

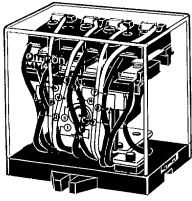


Terminal Arrangement

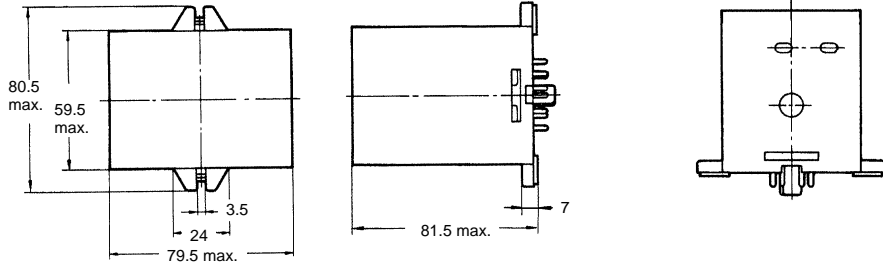
<p><b>MM3P</b></p>	<p><b>MM3PN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM3PN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM3PN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>
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**Note:** Wire the terminals correctly with no mistakes in coil polarity.

MM3XP(N)  
MM4P(N, -D)  
MM4XP(N, -D)



MM4P



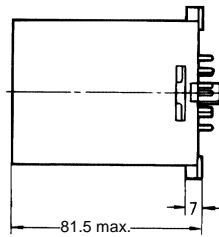
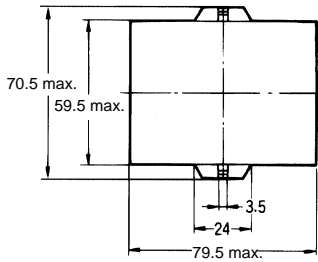
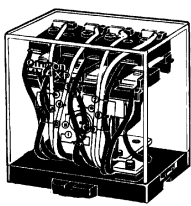
**Note:** As shown in the diagram, there are three 10-dia. holes in the side of the case for MMj XP(N, D).  
When a case-protection plate is attached, the width of the Relay will be 80 mm max.

Terminal Arrangement

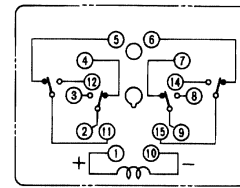
<p><b>MM3XP</b></p>	<p><b>MM3XPN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM3XPN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM3XPN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>	
<p><b>MM4P</b></p>	<p><b>MM4P-D</b></p>	<p><b>MM4PN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM4PN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM4PN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>
<p><b>MM4XP</b></p>	<p><b>MM4XP-D</b></p>	<p><b>MM4XPN</b> 6, 12, 24, 50 VAC</p>	<p><b>MM4XPN</b> 6, 12, 24, 48 VDC</p>	<p><b>MM4XPN</b> 100/(110), 200/(220) VAC 100/110, 200/220 VDC</p>

**Note:** Wire the terminals correctly with no mistakes in coil polarity.

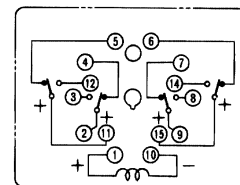
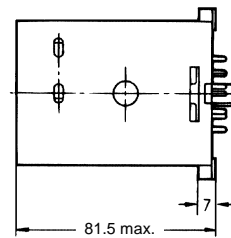
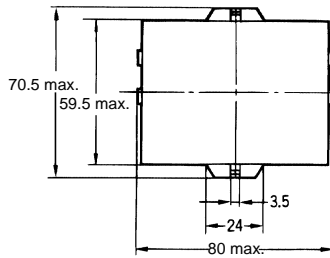
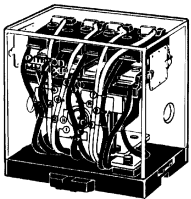
**MM4P-JD**



**Terminal Arrangement**



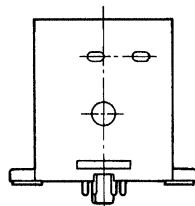
**MM4XP-JD**



**Note:** Make sure that all common connections are the same in polarity. The markings of the common connections on the casing all show "+" but the polarity of the common connections can be either all negative or all positive.

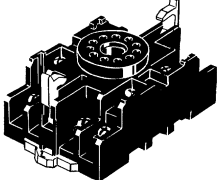

**■ Relays with Operation Indicators**

Dimensions are the same as those for standard Relays except that there are three 10-mm holes in the case as shown below.



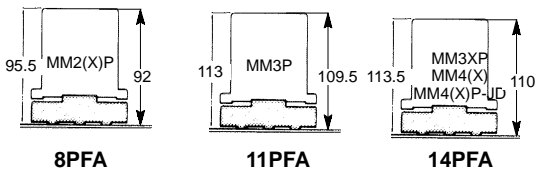
**Accessories**

**■ Sockets**

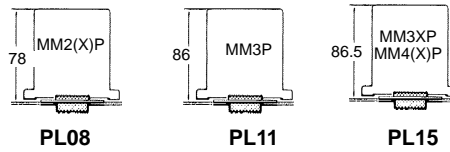
Relay model	DIN Track/Front-connecting Socket (screw terminals)	Back-connecting Socket (solder terminals)
MM2(X)P(-D)	8PFA	PL08
MM3P	11PFA 	PL11 
MM3XP, MM4(X)P(-D)	14PFA	PL15
MM4(X)P-JD	14PFA	---

## Mounting Height of Relay with Connecting Socket

### DIN Track Mounting



### Back Mounting



## Precautions

Refer to page NO TAG for general precautions.

### ■ Connection

- Use proper crimp terminals or 1.2- to 2-dia. single-conductor wire to connect screw terminals.
- Connect loads to DC-switching Relays so that arcs from adjacent terminals will not strike each other. E.g., connect all common terminals to the same polarity.
- Screw Terminal Model:  
Do not bend the coil terminals, otherwise the coil wire may be disconnected. Make sure that the tightening torque applied to each terminal is 1.27 N·m and the insertion force is 49 N for 10 s.
- Do not reverse polarity when connecting open DC-switching Relays, including 3- and 4-pole models.

### ■ Installation

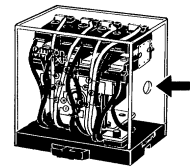
- Do not install the Relays where iron dust can adhere to the contacts or coil. Such dust can prevent the armature from moving freely and inhibit proper electrical contact.
- Relays can generate arcs externally. Either install the Relay in a location where a nearby object will not burn or use a covered Relay.
- DC-switching Relays contain a permanent magnet in the insulation base. Do not place a magnet or magnetic object near this base. Doing so will reduce the power of the permanent magnet, thus reducing Relay capacity.
- Insert PL Back-mounting Sockets from the back of the panel.
- Separate Relays from each other by at least 20 mm when mounting multiple Relays together.
- Relays should be mounted with the armature facing down.

### ■ Wiring

When connecting a load to the contact terminals of a model for DC loads, consider the polarity of the contact terminals so that the generated arcs on the adjacent poles will not collide. If the common connections of the Relay are all positive or all negative, no arc collision will occur.

### ■ MMXP

The MMXP has a hole in the Relay case to allow gas to escape. Do not use this Relay in locations subject to excessive dust.



### ■ Contact Loads

The contact load should be greater than the power consumption of the coil. If it is less than this power consumption or if the Relay is operated very infrequently, the contact can change chemically thus causing unstable operation.

### ■ Soldering

When soldering solder terminals, do not let flux or other foreign matter adhere to contacts or do not let the coil terminals become bent. Also, solder as quickly as possible because excessive heat may damage the coil.

### ■ Storage

A model for DC loads incorporates a permanent magnetic for arc suppression. Keep floppy disks away from the Relay, otherwise the data on the floppy disk may be damaged.

### ■ Operating Environment

Do not use the Relay in places with flammable gas, otherwise an explosion may result due to an arc generated from the Relay

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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