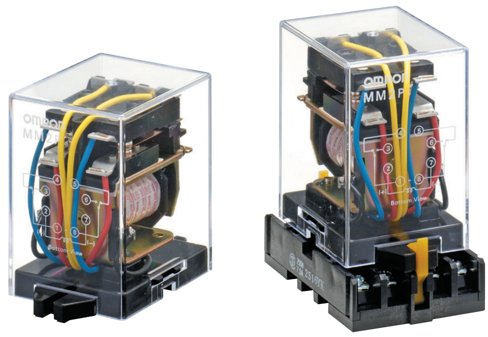
Power Relay

MM

CSM_MM_DS_E_5_4

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.



Refer to *Safety Precautions for All 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

■ Available Models

When your order, specify the rated voltage.

Open Coils (with Solder Terminals)

Type	Contact form	Relay model	Available rated voltage
Standard	DP	MM2	6, 12, 24, 50, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 200/220 VDC
	3P	MM3	100/(110), 200/(220) VAC 6, 12, 24, 48, 200/220 VDC
	4P	MM4	24, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 200/220 VDC
DC-switching	DP	MM2X	100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 200/220 VDC
	3P	MM3X	100/(110), 200/(220) VAC 12, 24, 100/110 VDC
	4P	MM4X	100/(110), 200/(220) VAC 12, 24, 48, 100/110 VDC

Open Coils (with Screw Terminals)

Type	Contact form	Relay model	Available rated voltage
Standard	DP	MM2B	6, 12, 24, 50, 100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3B	6, 100/(110), 200/(220) VAC 12, 24, 100/110 VDC
	4P	MM4B	6, 100/(110), 200/(220) VAC 12, 24, 48, 100/110 VDC
DC-switching	DP	MM2XB	24, 100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3XB	100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
	4P	MM4XB	12, 24, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 200/220 VDC

Cased Coils (Plug-in Terminals)

Type	Contact form	Relay model	Available rated voltage
Standard	DP	MM2P	6, 12, 24, 50, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3P	6, 24, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 125, 200/220 VDC
	4P	MM4P	6, 24, 50, 100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
DC-switching	DP	MM2XP	6, 24, 100/(110), 125, 200/(220) VAC 6, 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3XP	24, 50, 100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
	4P	MM4XP	12, 24, 50, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 125, 200/220 VDC
With built-in diode	DP	MM2P-D MM4P-D	12, 24, 48, 100/110, 200/220 VDC 12, 24, 48, 100/110, 125, 200/220 VDC
DC-switching with built-in diode	DP	MM2XP-D MM4XP-D	12, 24, 48, 100/110, 125, 200/220 VDC 12, 24, 48, 100/110, 125, 200/220 VDC
With operation indicator	DP	MM2PN	6, 24, 100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3PN	100/(110), 200/(220) VAC 6, 12, 24, 48, 100/110, 200/220 VDC
	4P	MM4PN	24, 100/(110), 200/(220) VAC 24, 48, 100/110, 125, 200/220 VDC
DC-switching with operation indicator	DP	MM2XPN	100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
	3P	MM3XPN	100/(110), 200/(220) VAC 24, 48, 100/110, 200/220 VDC
	4P	MM4XPN	100/(110), 200/(220) VAC 12, 24, 48, 100/110, 125, 200/220 VDC
Conforming to auxiliary power relay specifications	4P	MM4P-JD	100/(110), 110, 115, 200/(220), 220 VAC 24, 100/110, 125, 200/220 VDC
Conforming to auxiliary power relay specifications for DC-switching	4P	MM4XP-JD	100/(110), 110, 115, 200/(220) VAC 24, 48, 100/110, 125, 200/220 VDC

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□□□□-□
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

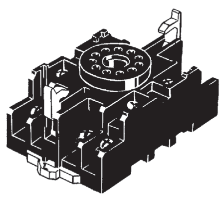
Note: The suffix “JD” indicates models conforming to auxiliary power relay specifications.

■ Accessories (Order Separately)

Mounting Brackets

Mounting Bracket (S bracket)	R99-03MM

Sockets

Relay model	DIN Track/Front-connecting Socket (screw terminals)	Back-connecting Socket (solder terminals)
MM2(X)P(N)(-D)	8PFA	PL08
MM3P(N)	11PFA 	PL11 
MM3XP(N), MM4(X)P(N)(-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	% of rated voltage			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%	Approx. 4.1 (DP) Approx. 6.3 (3P or 4P)	Approx. 3.5 (DP) Approx. 5.1 (3P or 4P)
	12	395	325	560	480	4.7	2.0					
	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.		Approx. 2.1 (DP) Approx. 2.7 (3P or 4P)	
	12	176		220		68	54					
	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.

Cased 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						
		50 Hz	60 Hz	50 Hz	60 Hz			Contact release	Contact operate	Contact release	Contact operate	% of rated voltage			Initial	Rated
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%	Ap-prox. 4.1 (DP) Ap-prox. 6.3 (3P or 4P)	Ap-prox. 3.5 (DP) Ap-prox. 5.1 (3P or 4P)
	12	345	295	490	430	4.7	2.0	0.07	0.01	0.04	0.07					
	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 (DP) Approx. 2.7 (3P or 4P)	
	12	176		220		68	54	0.74	1.0	0.87	1.4					
	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 approx. 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 approx. 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) 50 Hz	Rated current (mA) 60 Hz	Coil resistance (Ω)	Coil inductance (H) Contact release	Coil inductance (H) Contact operate	Must-operate voltage (% of rated voltage)	Must-release voltage (% of rated voltage)	Max. voltage (% of rated voltage)	Operation level (JEC-174D)	Power consumption (VA or W) Initial	Power consumption (VA or W) Rated
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	Approx. 5.1
	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	
	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 ±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 MM2(B), MM3(B), MM4(B) Resistive load (cosϕ = 1)	Open Relays MM2(B), MM3(B), MM4(B) Inductive load (cosϕ=0.4, L/R=7 ms)	Cased Relays MM2P(N, -D), MM3P(N), MM4P(N, -D) Resistive load (cosϕ = 1)	Cased Relays MM2P(N, -D), MM3P(N), MM4P(N, -D) Inductive load (cosϕ=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	
Max. switching power (reference value)	3,300 VA at 240 W		1,700 VA at 120 W	
Minimum permissible load (reference value) (See note.)	5 VDC 10 mA			

Note: This value is measured at 60 operations/min.

DC-switching Relays/Built-in Diode Relays

Item	Open Relays MM2X(B), MM3X(B), MM4X(B) Resistive load (cosϕ = 1)	Open Relays MM2X(B), MM3X(B), MM4X(B) Inductive load (L/R=7 ms)	Cased Relays MM2XP(-D), MM3XP, MM4XP(-D) Resistive load (cosϕ = 1)	Cased Relays MM2XP(-D), MM3XP, MM4XP(-D) 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 VAC, 250 VDC		250 VAC, 250 VDC	
Max. switching current	15 A		7.5 A	
Max. switching power (reference value)	1,200 W at 20 VA **✻1**	800 W at 20 VA **✻1**	800 W at 20 VA **✻1**	660 W at 20 VA **✻1**
Minimum permissible load (reference value) ✻2	5 VDC at 10 mA			

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.
3. The switching capacity for an AC load is minute.
✻1. Refer to *Switching an AC Load with a DC-switching Model ("X" Model)* on page 16.
✻2. This value is measured at 60 operations/min.

Contacts (Conforming to Auxiliary Power Relay Specifications)

Item	MM4P-JD		MM4XP-JD	
	Resistive load	Inductive load (cosϕ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cosϕ = 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			
Max. switching power (reference value)	1,100 VA, 120 W, 30 W (L/R = 40 ms)		20 VA, 550 W, 40 W (L/R = 40 ms)	

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. 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.

■ Characteristics

Standard Relays

Item	Open Relays	Cased 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 to 10 Hz, 0.75 mm single amplitude (1.5 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: 100 m/s^2	
Endurance	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.)	
Ambient temperature	Operating:–10°C to 55°C (with no icing or condensation)	
Ambient humidity	Operating:5% to 85%	
Weight	Standard models: DC-switching models MM2 approx. 160 g MM2X approx. 165 g MM2XP approx. 225 g MM3 approx. 270 g MM3X approx. 275 g MM3XP approx. 395 g MM4 approx. 300 g MM4X approx. 310 g MM4XP approx. 420 g MM2P approx. 220 g MM3P approx. 360 g MM4P approx. 410 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 endurance was measured at an ambient temperature of 23°C.

Relays (Conforming to Auxiliary Power Relay Specifications)

Item	Cased 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 Electrical: 1,800 operations/hr (under rated load)
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 polarity: 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 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) Malfunction: 10 to 22 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude)
Shock resistance	Destruction: 300 m/s² Malfunction: 30 m/s²
Endurance	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)
Ambient humidity	Operating: 5% to 85%
Weight	MM4P-JD: approx. 410 g MM4XP-JD: 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 endurance was measured at an ambient temperature of 23°C.
6. This value was measured at a switching frequency of 60 operations per minute.

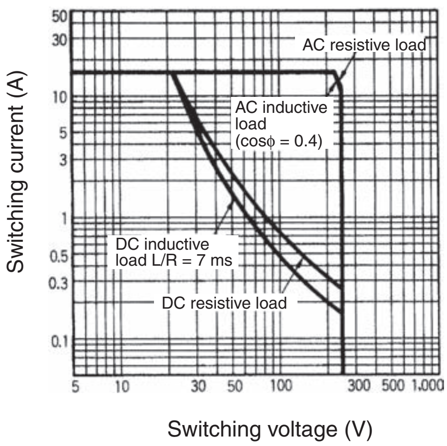
Engineering Data

■ Standard Relays

Maximum Switching Power

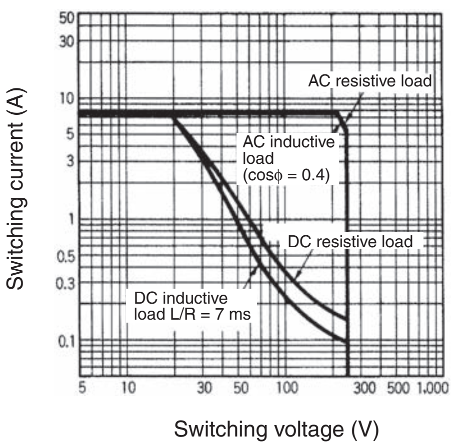
Open Relays

MM□(B)



Cased Relays

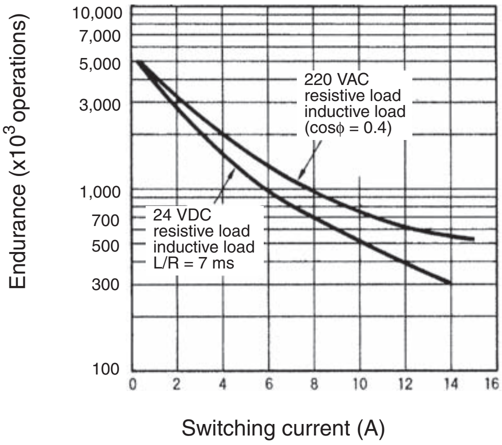
MM□P(N, -D)



Endurance Curves

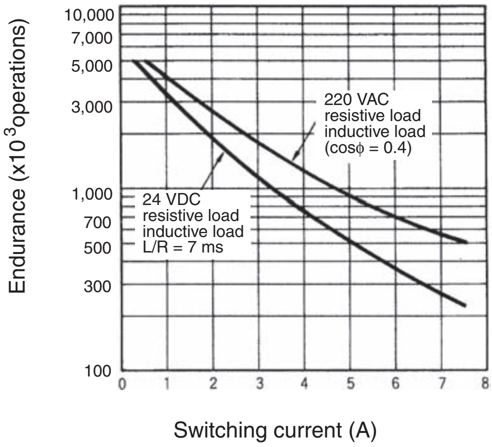
Open Relays

MM□(B)



Cased Relays

MM□P(N, -D)

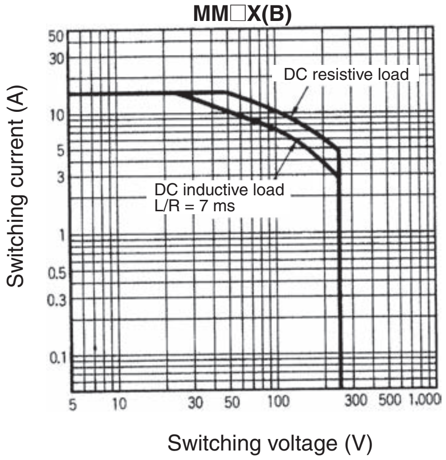


■ DC-switching Relays

Maximum Switching Power

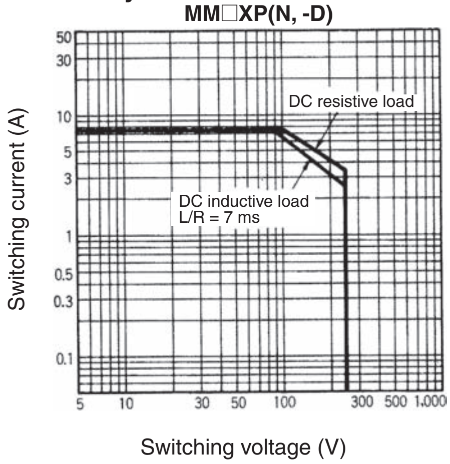
Open Relays

MM□X(B)



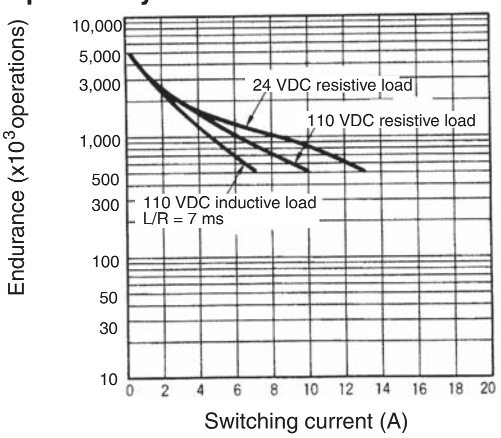
Cased Relays

MM□XP(N, -D)

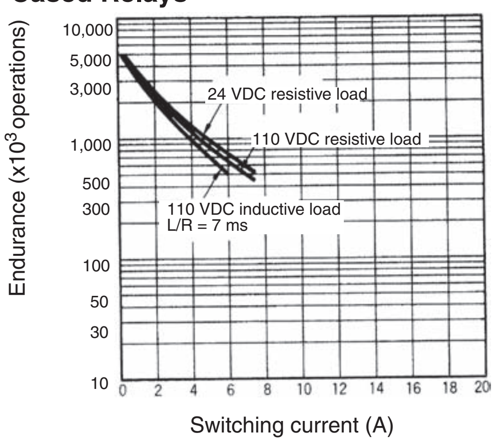


Endurance Curves

Open Relays



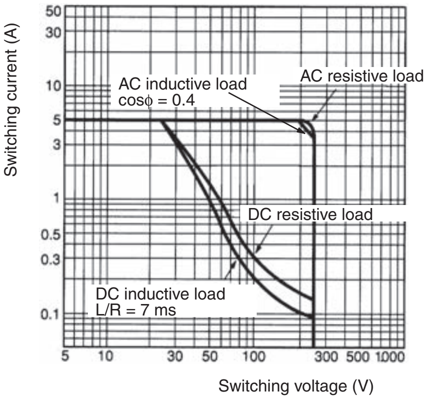
Cased Relays



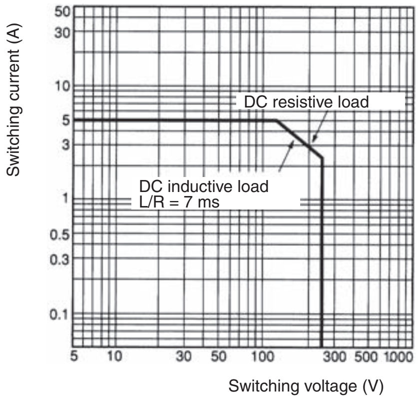
■ Relays Conforming to Auxiliary Power Relay Specifications

Maximum Switching Power

MM4P-JD

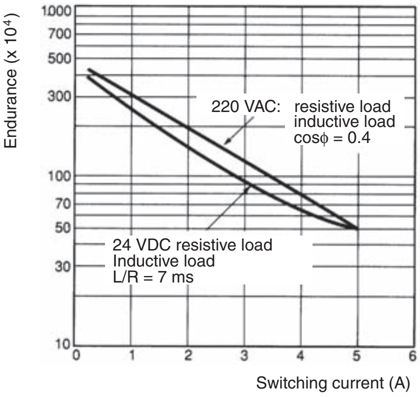


MM4XP-JD

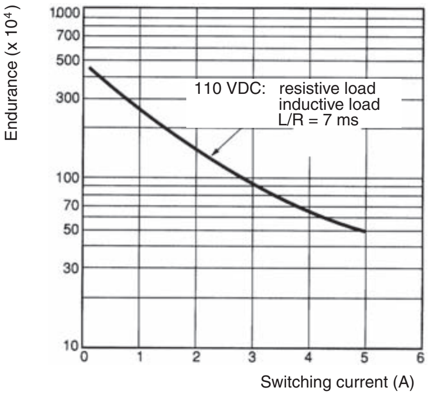


Endurance Curves

MM4P-JD

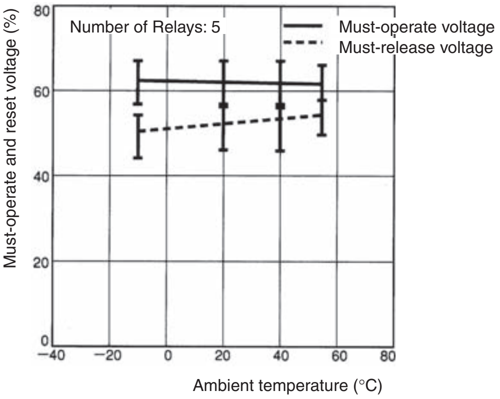


MM4XP-JD

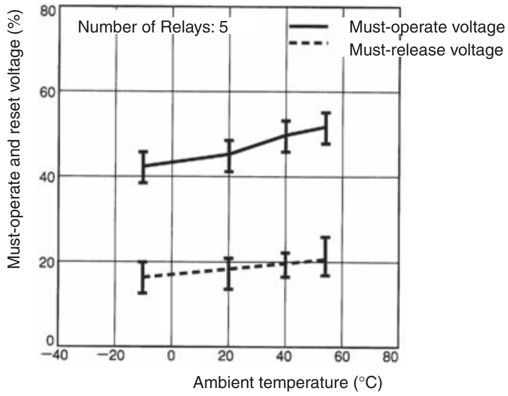


Ambient Temperature vs. Must-operate and Must-release Voltage

MM2P AC (60 Hz)

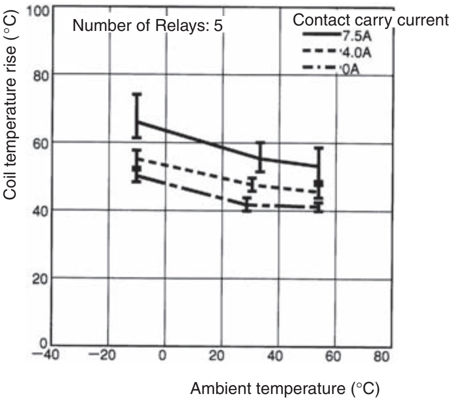


MM2P DC

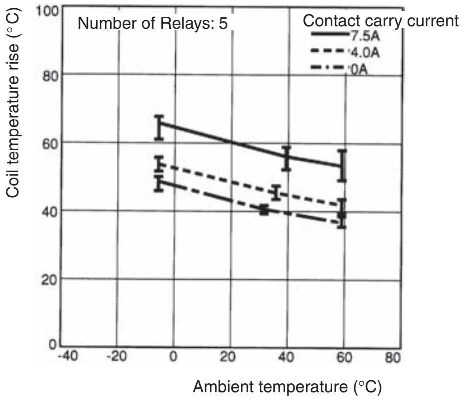


Ambient Temperature vs. Coil Temperature Rise

MM2P 110 VAC (60 Hz)

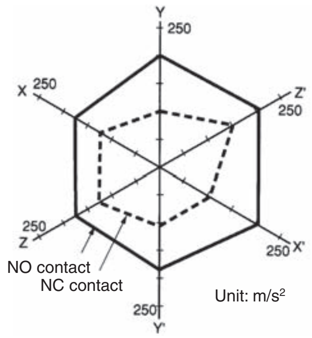


MM2P DC



Malfunctioning Shock

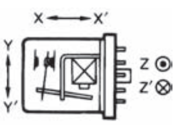
MM2P AC



Number of samples: 5

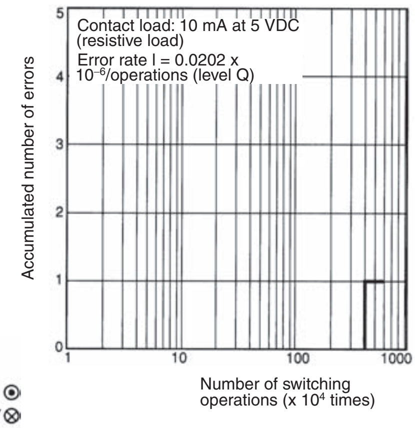
Measurement conditions: Impose a shock of 100 m/s² in the ±X, ±Y, and ±Z directions three times each with the Relay energized and not energized to check the shock values that cause the Relay to malfunction.

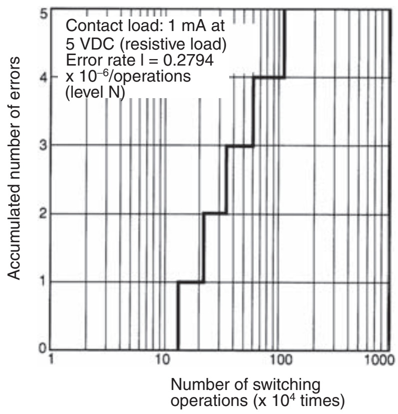
Shock direction



Contact Reliability (Improved Allen-Bradley Test Circuit)

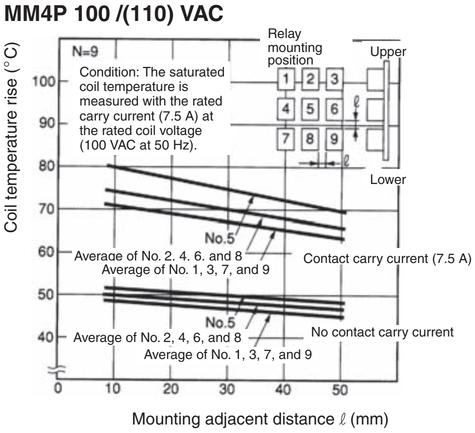
MM4P 24 VDC





Relay Mounting Adjacent Distance vs. Coil Temperature Rise

MM4P 100 /(110) VAC



Dimensions

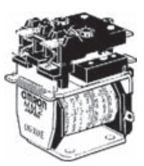
Note: All units are in millimeters unless otherwise indicated.

■ Standard Relays

Open Relays

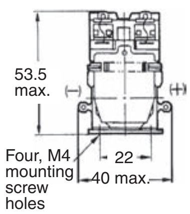
Solder Terminals

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

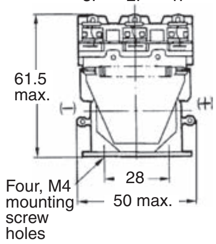


MM2

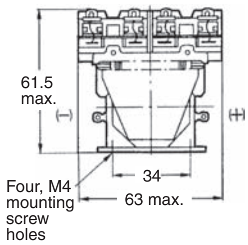
MM2(X)



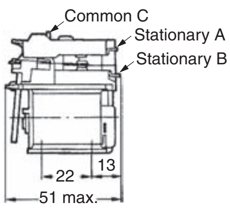
MM3(X)



MM4(X)



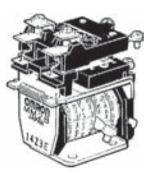
Side View



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

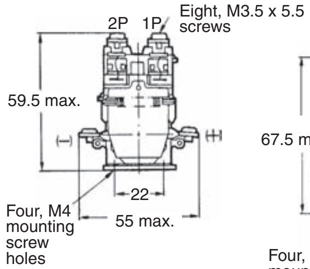
Screw Terminals

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

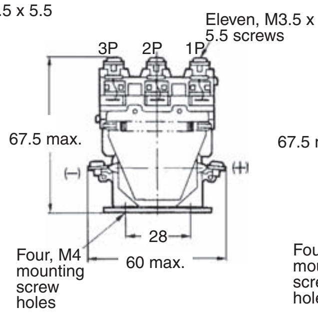


MM2B

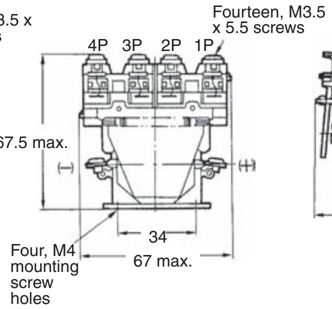
MM2(X)B



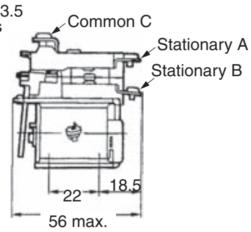
MM3(X)B



MM4(X)B



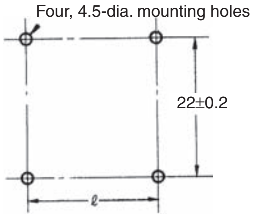
Side View



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

Mounting Holes (Bottom View)

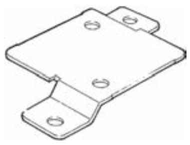
Direct mounting

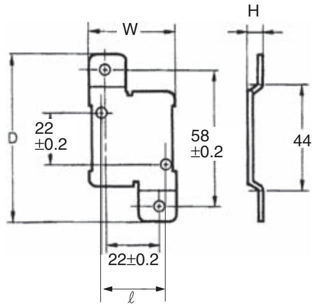


Length of ℓ
DPDT: 22±0.2
3PDT: 28±0.2
4PDT: 34±0.2

Mounting Bracket (S Bracket)
R99-03 (S KANAGU) FOR MM□

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

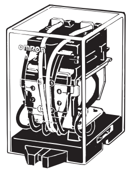




	R99-03 (S KANAGU) FOR MM2 (611) (DPDT)	R99-03 (S KANAGU) FOR MM3. 4 (61) 3PDT, 4PDT
ℓ	22	28, 34
D	71 max.	71 max.
W	36 max.	46 max.
H	6 max.	6 max.

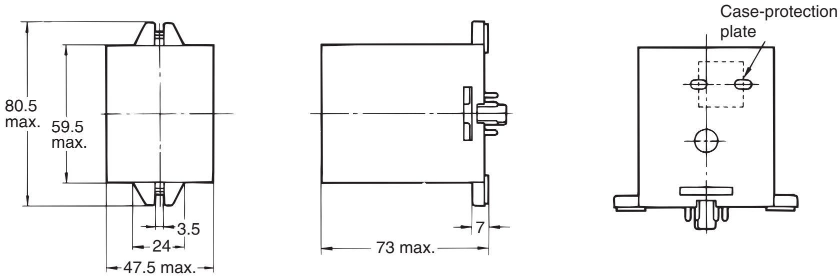
Cased Relays

Plug-in Terminals



MM2P

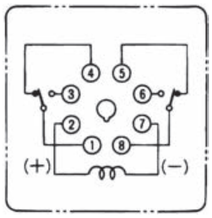
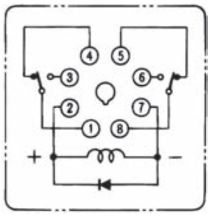
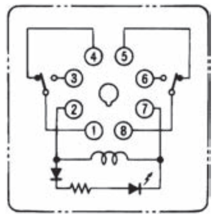
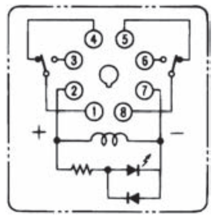
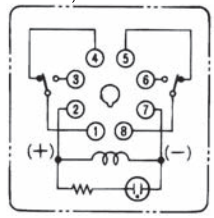
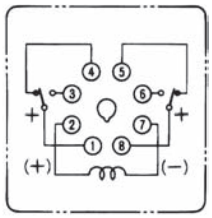
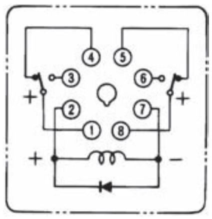
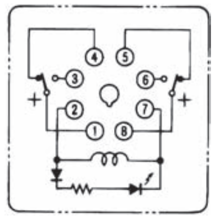
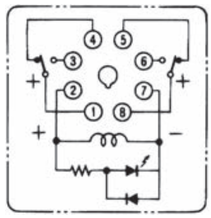
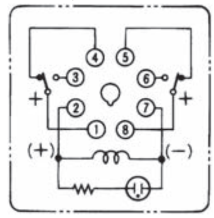
MM2P(N, -D)
MM2XP(N, -D)



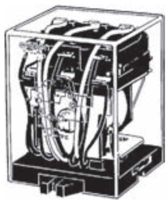
Note: As shown in the diagram, there are three 10-dia. holes in the side of the case for the MM2XP(N, -D).
When a case-protection plate is attached, the width of the Relay will be 48 mm max.

Terminal Arrangement (Bottom View)

Make sure that all common connections have the same polarity for the MM2XP-N/-D. The markings of the common connections on the casing all show "+" but the polarity of the common connections can be either negative or positive as long as they are all the same.

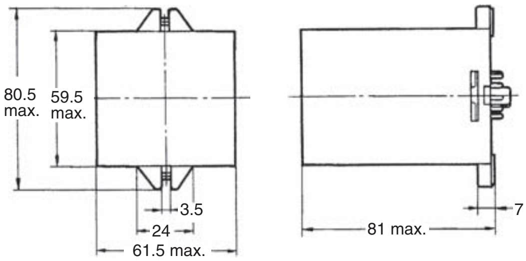
MM2P	MM2P-D	MM2PN	MM2PN	MM2PN
		6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 
MM2XP	**MM2XP-D**	**MM2XPN**	**MM2XPN**	**MM2XPN**
		6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 

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

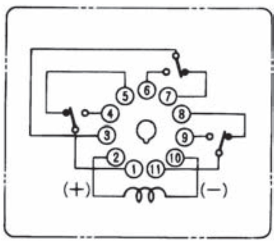
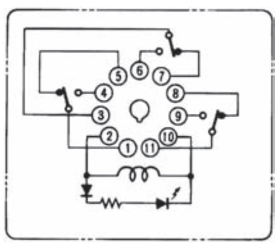
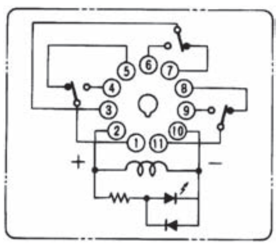
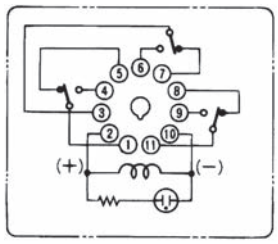


MM3P

MM3P(N)

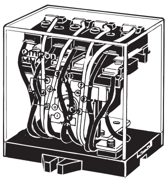


Terminal Arrangement (Bottom View)

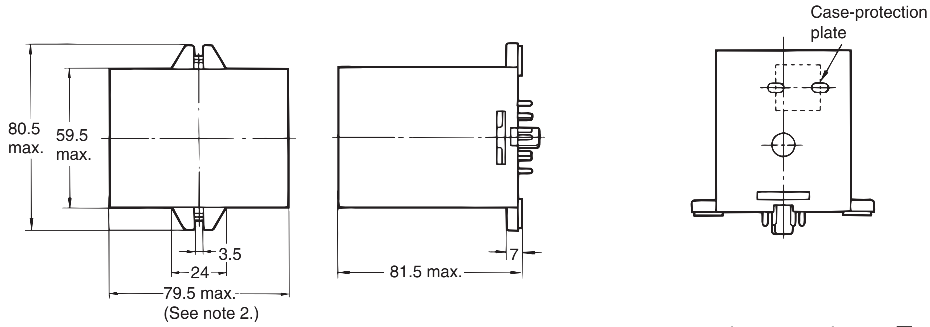
MM3P	MM3PN	MM3PN	MM3PN
	6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 

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

MM3PXP(N)
MM4P(N, -D)
MM4XP(N, -D)



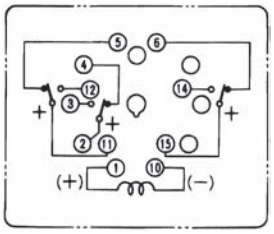
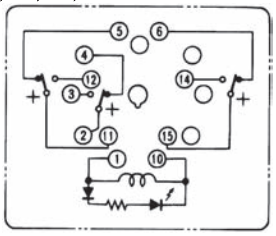
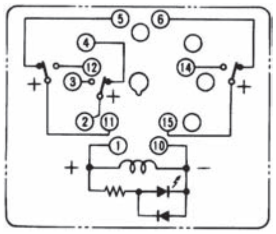
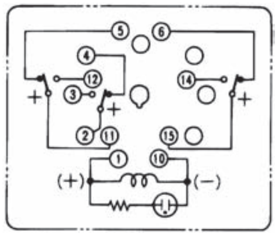
MM4P

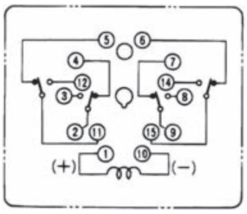
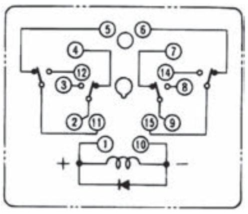
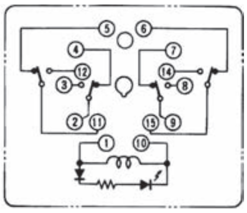
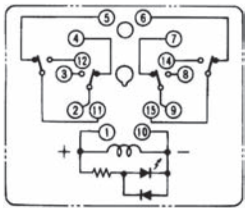
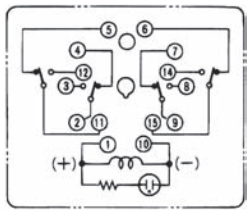
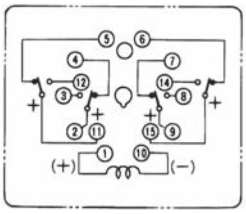
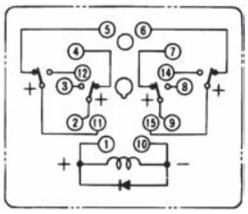
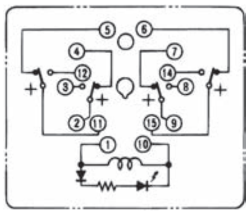
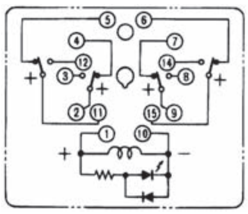
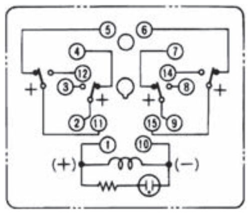


Note 1: As shown in the diagram, there are three 10-dia. holes in the side of the case for MM□XP(N, -D).
2: When a case-protection plate is attached, the width of the Relay will be 80 mm max.

Terminal Arrangement (Bottom View)

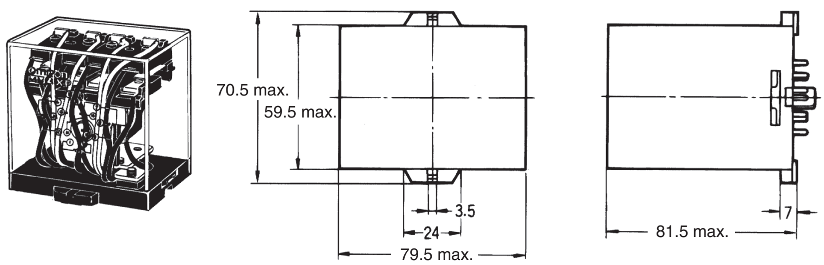
Make sure that all common connections have the same polarity for the MM□XP-N/-D. The markings of the common connections on the casing all show "+" but the polarity of the common connections can be either negative or positive as long as they are all the same.

MM3XP	MM3XPN	MM3XPN	MM3XPN
	6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 

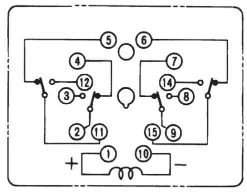
MM4P	MM4P-D	MM4PN	MM4PN	MM4PN
		6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 
MM4XP	**MM4XP-D**	**MM4XPN**	**MM4XPN**	**MM4XPN**
		6, 12, 24, 50 VAC 	6, 12, 24, 48 VDC 	100/(110), 200/(220) VAC 100/110, 200/220 VDC 

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

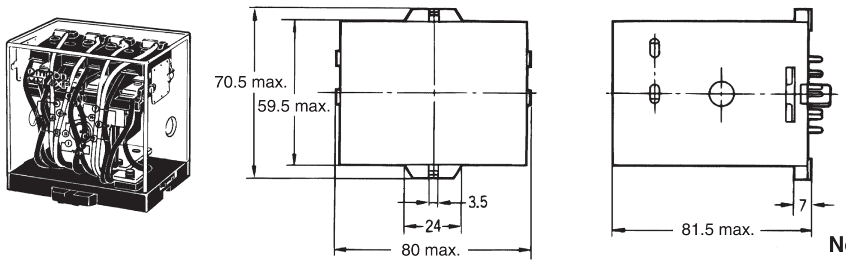
MM4P-JD

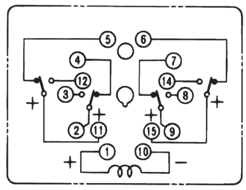


Terminal Arrangement (Bottom View)



MM4XP-JD

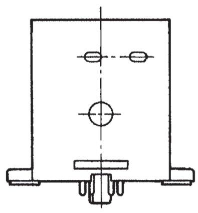




Note: Make sure that all common connections are the same in polarity. The markings of the common connections on the casing all show "+" but the polarity of the common connections can be either all negative or all positive.

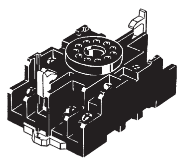
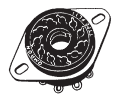
■ Relays with Operation Indicators

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



Accessories

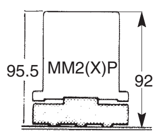
■ Sockets

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

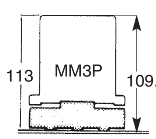
Note: When using the MM4(X)P-JD (i.e., a model conforming to auxiliary power relay specifications) by itself, the PL15 Back-connecting Socket cannot be used.

Height with Socket

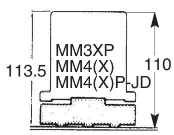
DIN Track/Front-connecting Socket



8PFA

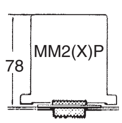


11PFA

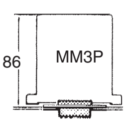


14PFA

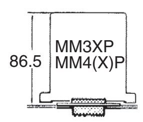
Back-connecting Socket



PL08



PL11



PL15

Safety Precautions

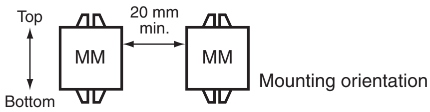
Refer to *Safety Precautions for All Relays*.

■ Connection

- Use proper crimp terminals or 1.2- to 2-mm-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 0.78 to 1.18 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.
- To minimize the influence of heat, separate Relays from each other by at least 20 mm for cooling when mounting multiple Relays together.



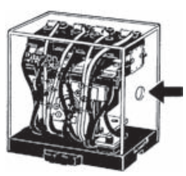
- Relays should be mounted with the armature facing down.

■ 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.

■ Diode Built into Relays

A diode is built into the Relays to absorb reverse electromotive force from the relay coil. The diode will be destroyed if a large external surge voltage is applied. If there is a possibility of a large external surge voltage being applied, take suitable measures to absorb the surge.

■ Storage

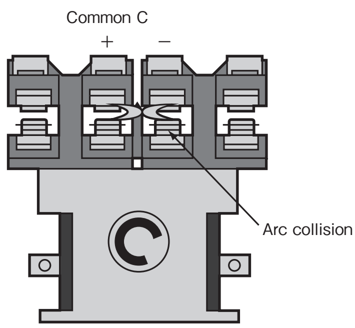
A model for DC loads incorporates a permanent magnetic for arc suppression. Keep floppy disks away from the Relay, otherwise the data on the floppy disk may be damaged.

■ 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

■ Switching an AC Load with a DC-switching Model (“X” Model)

DC-switching Relays (“X” models) use a magnet to extinguish arcs. The polarity must be correct when you connect the switching section. However, if you connect an AC load, the positive and negative poles of the power supply alternate. This can cause short-circuits due to the collision of arcs that occur when the Relay turns OFF.
Therefore, the switching capacity for an AC load is specified as 20 VA or less to prevent short circuits caused by arc collisions.
Take sufficient caution if you switch an AC Load with a DC-switching model (“X” models).



■ Refer to the technical guide on your OMRON website for technical descriptions and FAQs on the product.

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

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