MK

CSM_MK_DS_E_2_8

A Wide Variation of Octal Pin Power Relays

- Coil type Relays unified to an AC4 rating (100/110 VAC at 50/60Hz and 200/220 VAC at 50/60 Hz).
- Highly durable with a life of over 5,000,000 mechanical operations.
- Extensive product lineup: Standard models, special contact models, bifurcated contact models, double-winding latching models ✻, and more.

✻ Refer to the *MKK Electromagnetic Latching Relays*.

⚠ **Refer to the *Common Relay Precautions*.**

Model Number Structure

Configuration

Classification	Structure Number of poles	Encased models Relays with Plug-in Terminals
Standard models	2	MK2P
	3	MK3P
Bifurcated contacts	2	MK2ZP
	3	MK3ZP
Models with built-in mechanical operation indicators	2	MK2PA
	3	MK3PA
Models with built-in operation indicator lights	2	MK2PN
	3	MK3PN
Special internal connection models	2	MK2P-2 and MK2ZP-2
	3	MK3P-2, MK3ZP-2, MK3P-5, and MK3ZP-5
Models with built-in arc barriers	3	MK3LP
Models with built-in diodes	2	MK2P-DO
	3	MK3P-DO

Ordering Information

When your order, specify the rated voltage.

List of Models

Encased Models and Models with Plug-in Terminals

Number of poles / Classification		2 poles Model	2 poles Rated voltage (V)	3 poles Model	3 poles Rated voltage (V)
Standard models		MK2P	6, 12, 24, 50, 100/110, or 200/220 VAC	MK3P	6, 12, 24, 50, 100/110, or 200/220 VAC
			6, 12, 24, 48, or 100 VDC		6, 12, 24, 48, or 100/110 VDC
Bifurcated contacts		MK2ZP	24, 100/110, or 200/220 VAC	MK3ZP	6, 12, 24, 50, 100/110, or 200/220 VAC
			12, 24, 48, or 100 VDC		6, 12, 24, 48, or 100 VDC
Models with built-in diodes		MK2P-DO	6, 12, 24, 48, or 100 VDC	MK3P-DO	12, 24, 48, or 100 VDC
Models with built-in operation indicators		MK2PA	100/110 or 200/220 VAC	MK3PA	24, 100/110, or 200/220 VAC
			24, 48, or 100 VDC		24, 48, or 100 VDC
Models with built-in operation indicators		MK2PN	6, 12, 24, 50, 100/110, or 200/220 VAC	MK3PN	6, 12, 24, 50, 100/110, or 200/220 VAC
			6, 12, 24, 48, or 100 VDC		12, 24, 48, or 100 VDC
Models with built-in arc barriers		---	---	MK3LP	12, 24, 100/110, or 200/220 VAC
					24, 48, or 100 VDC
Special internal connection models	Single-contacts	MK2P-2	6, 24, 50, 100/110, or 200/220 VAC	MK3P-2	6, 24, 50, 100/110, or 200/220 VAC
			6, 12, 24, 48, or 100 VDC		12, 24, 48, or 100 VDC
		---	---	MK3P-5	12, 24, 100/110, or 200/220 VAC
					6, 12, 24, 48, or 100 VDC
	Bifurcated contacts	MK2ZP-2	24, 100/110, or 200/220 VAC	MK3ZP-2	24, 100/110 or 200/220 VAC
			24 VDC		6, 12, 24, 48, or 100 VDC
		---	---	MK3ZP-5	24, 100/110, or 200/220 VAC
					24 VDC

Note: Ask your OMRON representative for details on product specifications and the ability to manufacture products with voltages other than the above coil specifications.

Ratings and Specifications

Ratings

Operating Coil

MK2(P or P-2), MK3(P, P-2, or P-5), MK2ZP(-2), MK□PA, and MK□P-DO

Item / Rated voltage (V)		Rated current (mA) 50 Hz	Rated current (mA) 60Hz	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Maximum voltage (V)	Power consumption (VA, W)
AC	6	404	360	---	80% max.	30% min.	110%	Approx. 1.9 to Approx. 2.2 (at 60 Hz)
	12	202	180	---				
	24	98	88	---				
	50	43.6	39	---				
	✻100/110	22.4/24.7	19/21	---				Approx. 1.9 to 2.4 (at 60 Hz)
	✻200/220	11.7/12.9	10/11	---				
DC	6	255		23.5		10% min.		Approx. 1.5
	12	126		95				
	24	56		430				
	48	29.5		1,630				
	100	14.7		6,800				

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–0% for the AC rated current and ±15% for the DC coil resistance.
2. Operating characteristics were measured at a coil temperature of 23°C.
3. The maximum allowable voltage is the maximum value of the allowable voltage fluctuation range for the Relay coil operating power supply and was measured at an ambient temperature of 23°C. There is no continuous allowance.

✻ These are for a 4 rating specification.

MK3ZP(-2 and -5) and MK3LP

Item / Rated voltage (V)		Rated current (mA) 50 Hz	Rated current (mA) 60Hz	Coil resistance (Ω)	Power consumption (VA, W)
AC	6	500	445	---	Approx. 2.8 (at 60 Hz)
	12	258	230	---	
	24	130	116	---	
	50	63	56	---	
	✱100/110	27.1/29.8	23.1/25.4	---	Approx. 2.3 to 2.8 (at 60 Hz)
	✱200/220	13.6/14.9	11.5/12.7	---	
DC	6	302		19.9	Approx. 1.9
	12	156		77	
	24	79		303	
	48	39		1,230	
	100	18.9		5,300	

MK□PN

Item / Rated voltage (V)		Rated current (mA) 50 Hz	Rated current (mA) 60Hz	Coil resistance (Ω)	Power consumption (VA, W)
AC	6	414	370	---	Approx. 2.2 to 2.5 (at 60 Hz)
	12	212	190	---	
	24	108	98	---	
	50	53	48	---	
	✱100/110	22.4/24.7	19/21	---	Approx. 1.9 to 2.4 (at 60 Hz)
	✱200/220	11.7/12.9	10/11	---	
DC	6	265		23.5	Approx. 1.6 to 2.0
	12	136		95	
	24	66		430	
	48	39		1,630	
	100	14.7		6,800	Approx. 1.5

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–20% for the AC rated current and ±15% for the DC coil resistance.
2. Operating characteristics were measured at a coil temperature of 23°C.
3. The maximum allowable voltage is the maximum value of the allowable voltage fluctuation range for the Relay coil operating power supply and was measured at an ambient temperature of 23°C. There is no continuous allowance.

✱ These are for a 4 rating specification.

Contact Ratings

Model / Load / Item	MK2P(-2), MK2PN, MK2PA, and MK2P-DO		MK3P(-2 and -5), MK3PN, MK3PA, and MK3P-DO		MK2ZP(-2) and MK3ZP(-2 and -5)		MK3LP	
	Resistive load	Inductive load (cos φ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cos φ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cos φ = 0.4, L/R = 7 ms)	Resistive load	Inductive load (cos φ = 0.4, L/R = 7 ms)
Contact structure	Single				Bifurcated		Single	
Contact materials	Ag				Ag alloy		Ag	
Rated load	5 A at 220 VAC 3 A at 24 VDC	2A at 220 VAC 2.5A at 24 VDC	3 A at 220 VAC 2 A at 24 VDC	1.2 A at 220 VAC 1.5 A at 24 VDC	3 A at 220 VAC 2 A at 24 VDC	1.2 A at 220 VAC 1.5 A at 24 VDC	5 A at 220 VAC 3 A at 24 VDC	3 A at 220 VAC 1.8 A at 24 VDC
Rated carry current	5 A		3 A		3 A		5 A	
Maximum contact voltage	250 VAC 250 VDC		250 VAC 250 VDC		250 VAC 250 VDC		250 VAC 250 VDC	
Maximum contact current	5 A	5 A	3 A	3 A	3 A	3 A	5 A	5 A
Maximum switching capacity (reference value)	1,100 VA 72 W	440 VA 60 W	660 VA 48 W	264 VA 36 W	660 VA 48 W	264 VA 36 W	1,100 VA 72 W	660 VA 43.2 W

Ambient operating temperature	–10 to 40°C (with no icing or condensation)
Ambient operating humidity	5% to 85%

Characteristics

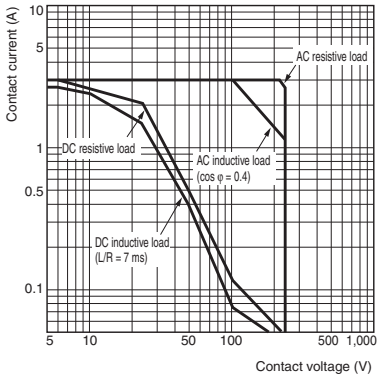
Item		Classification	Standard models and others✱7	Bifurcated contacts
Contact resistance✱1			50 mΩ max.	25 mΩ max.
Operation time✱2			AC: 20 ms max., DC: 30 ms max.	
Release time✱2			20 ms max., (✱4 40 ms max.)	
Maximum operating frequency		Mechanical	18,000 operations/h	
		Rated load	1,800 operations/h	
Insulation resistance✱3			100 MΩ min.	
Dielectric strength	2 poles	Between coil and contacts	2,000 VAC at 50/60 Hz for 1 min.	
		Between contacts of different polarity		
		Between contacts of the same polarity	1,000 VAC at 50/60 Hz for 1 min.	
	3 poles	Between coil and contacts	1,500 VAC at 50/60 Hz for 1 min.	
		Between contacts of different polarity		
		Between contacts of the same polarity	1,000 VAC at 50/60 Hz for 1 min.	
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-mm double amplitude)	
Shock resistance		Destruction	1,000 m/s²	
		Malfunction	100 m/s²	
Endurance		Mechanical	5,000,000 operations min. (operating frequency: 18,000 operations/hr)	
		Electrical✱5	500,000 operations min. (rated load, switching frequency: 1,800 operations/h)	
Failure rate P level (reference value✱6)			10 mA at 1 VDC	100 μA at 1 VDC
Weight			Approx. 85 g	

Note: The above values are initial values.
✱1. Measurement conditions: 1 A at 5 VDC using the voltage drop method
✱2. Measurement conditions: With rated operating power applied, not including contact bounce.
Ambient temperature condition: 23°C
✱3. Measurement conditions: For 500 VDC applied to the same location as for dielectric strength measurement.
✱4. This value is for models with built-in diodes.
✱5. Ambient temperature condition: 23°C
✱6. This value was measured at a switching frequency of 60 operations per minute.
✱7. Standard models, Model with built-in mechanical operation indicators, Model with built-in operation indicators lights, Special internal connection models (Excluding Bifurcated contacts type), Models with built-in arc barriers, Models with built-in diodes

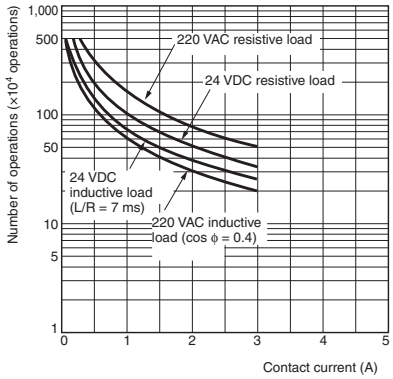
Engineering Data

Standard Models, MK□P

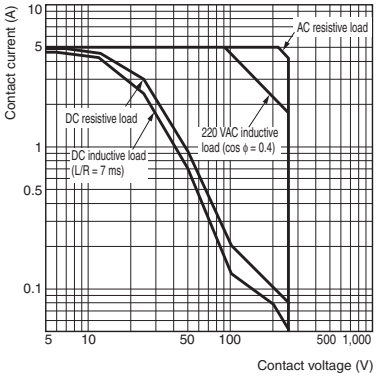
MK3P
Maximum Switching Capacity



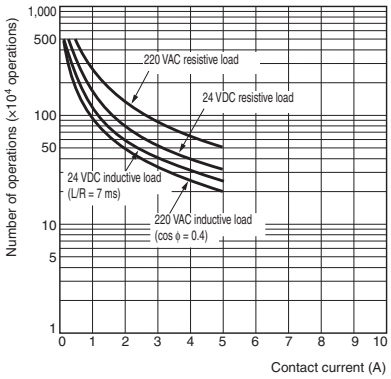
Endurance Curve



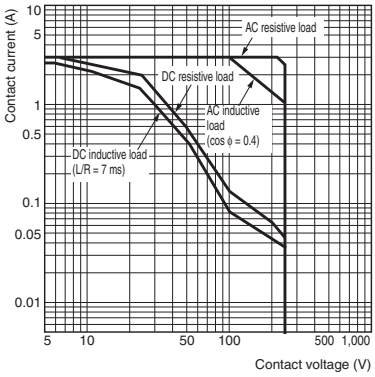
MK2P
Maximum Switching Capacity



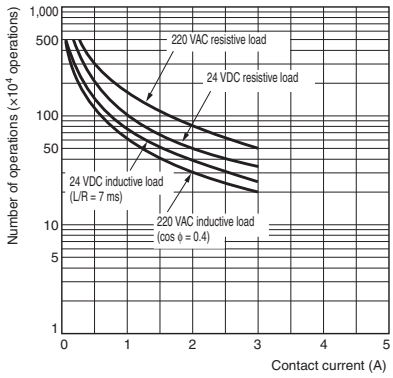
Endurance Curve



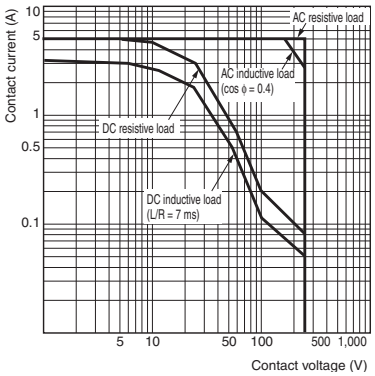
MK2ZP and MK3ZP
Maximum Switching Capacity



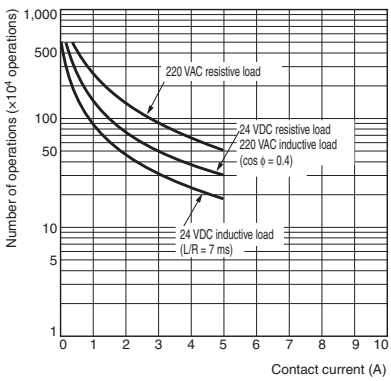
Endurance Curve



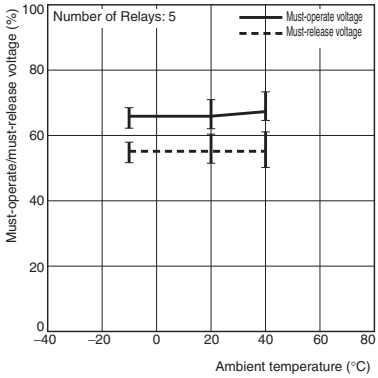
MK3LP
Maximum Switching Capacity



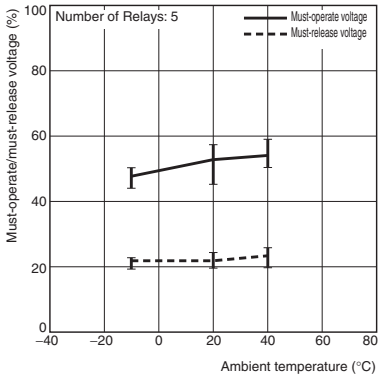
Endurance Curve



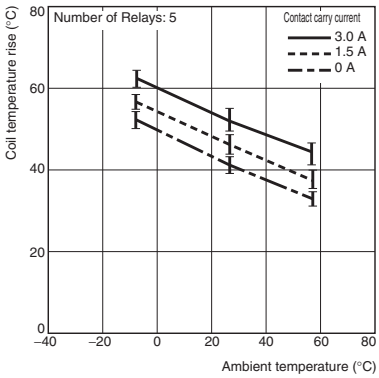
Ambient Temperature vs. Must-operate and Must-release Voltage
MK3P AC (60 Hz)



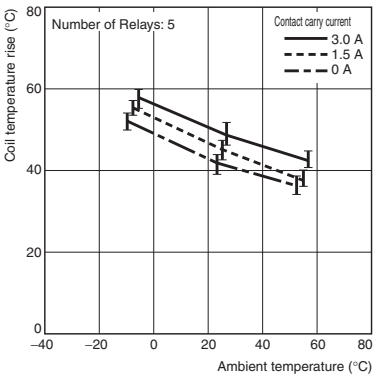
MK3P DC



Ambient Temperature vs. Coil Temperature Rise
MK3P AC110V (50 Hz)

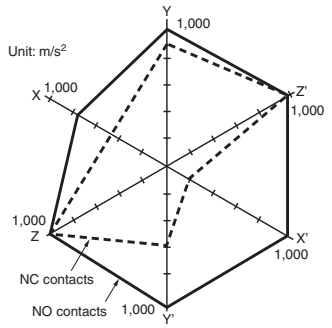


MK3P DC

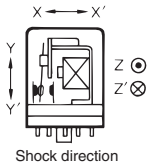


Malfunctioning Shock

MK3P AC

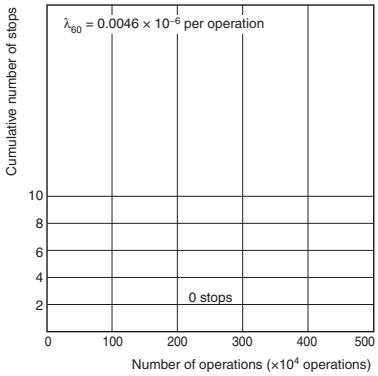


N = 5
Measurement: Shock was applied 3 times each in 6 directions along 3 axes with the Relay energized and not energized to check the shock values that cause the Relay to malfunction.
Criteria: 100 m/s²

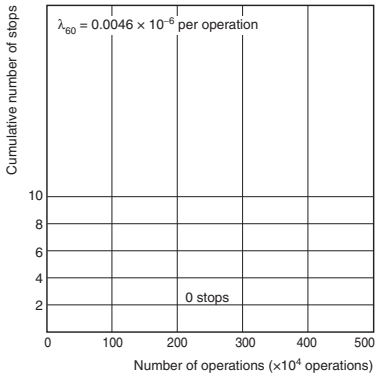


Contact Reliability (JIS C4530 Allen Bradley Circuit)

MK2P and MK3P 100 VAC

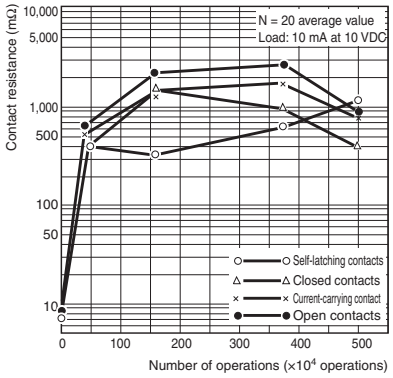


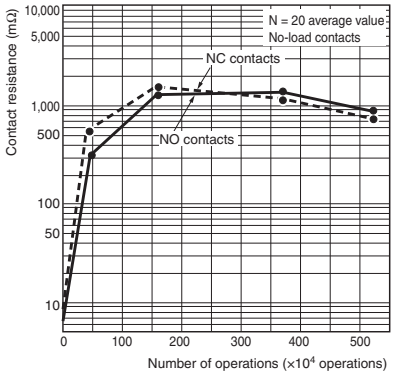
MK2P and MK3P 24 VDC



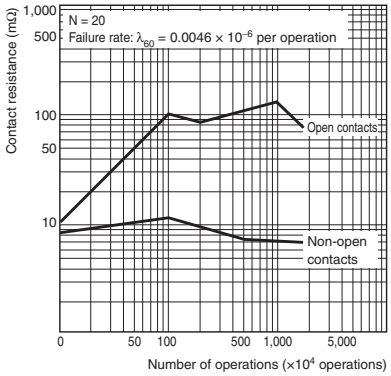
Contact Reliability (Modified Allen Bradley Circuit)

MK3P 24 VDC



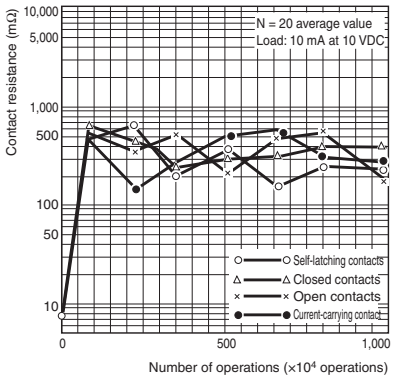


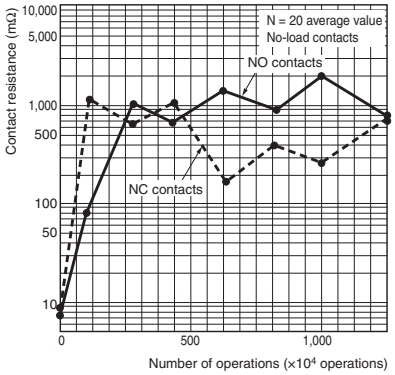
MK3P 100/110 VAC



Contact Reliability (Modified Allen Bradley Circuit)

MK2ZP and MK3ZP





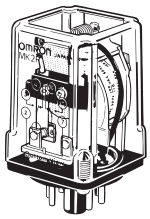
Dimensions

(Unit: mm)

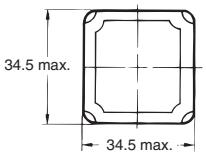
List of Models

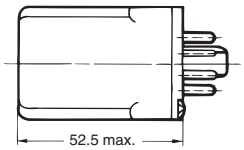
Relays with Plug-in Terminals

MK2(Z)P(-2)
MK2P-DO
MK2PN
MK2PA



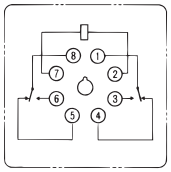
The above figure is for the MK2P.



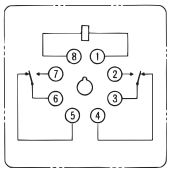


Terminal Arrangement/Internal Connections (Bottom View)

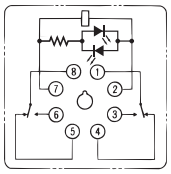
MK2P, MK2ZP, and MK2PA



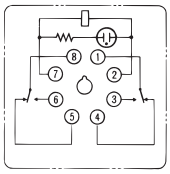
MK2P-2 and MK2ZP-2



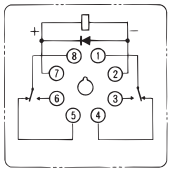
MK2PN
6, 12, 24, or 50 VAC
6, 12, 24, or 48 VDC



MK2PN✻1
100/110 or 200/220 VAC
100 VDC



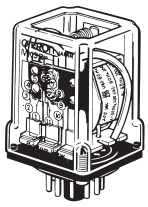
MK2P-DO



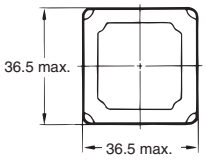
Note: Only the MK2P-DO has coil polarity.
✻1. The operation indicators are neon indicators.

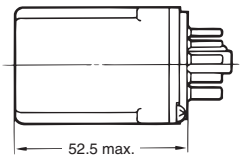
MK3(Z)P(-2, -5)
MK3PA
MK3LP

MK3P-DO
MK3PN

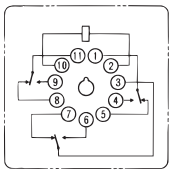


The above figure is for the MK3ZP.

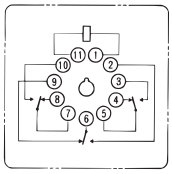




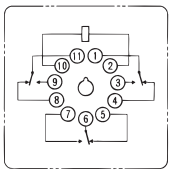
MK3(Z)P and MK3PA
MK3LP



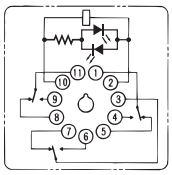
MK3P-2
MK3ZP-2



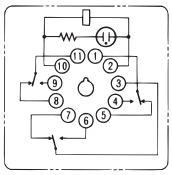
MK3P-5
MK3ZP-5



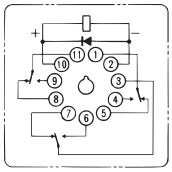
MK3PN
6, 12, 24, or 50 VAC
6, 12, 24, or 48 VDC



MK3PN✻1
100/110 or 200/220 VAC
100 VDC

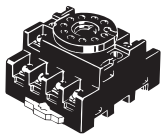
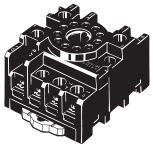
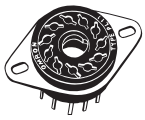


MK3P-DO



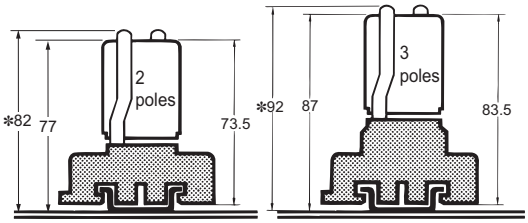
Note: Only the MK3P-DO has coil polarity.
✻1. The operation indicators are neon indicators.

Connection Sockets Refer to *Common Socket and DIN Track Products* for external dimensions and pricing information.

Sockets / Relay	Front-mounting Sockets		Back-mounting Sockets		
	Track or screw mounting		Solder terminals	Wrapping terminals	Relays with PCB Terminals
2 poles	PF083A	PF083A-E	PL08	PL08-Q	PLE08-0
3 poles	PF113A 	PF113A-E 	PL11	PL11-Q 	PLE11-0

Mounting Height with Sockets

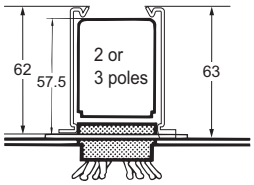
Front-mounting Sockets



PF083A PF113A

Note: The PF083A and PF113A can be mounted on a track or with screws.
✻ When a PFC-A1 is used.

Back-mounting Sockets

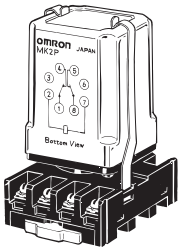


PL□

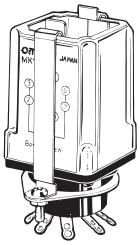
Relay Hold-down Clips Refer to *Common Socket and DIN Track Products* for external dimensions and pricing information.

Secure the Relay with the Hold-down Clips to prevent the Relay from falling out due to vibration or shock.

PFC-A1



PLC



Type

Sockets		Applicable Relay	MK2(Z)P	MK3P MK2KP	MK3ZP MK3LP
Front-mounting Sockets	Track or screw mounting	PF083A	PFC-A1	---	---
	Track or screw mounting	PF113A	---	PFC-A1	PFC-A1
Back-mounting Sockets	Solder terminals and wrapping terminals	PL08(-Q)	PLC	---	---
		PL11(-Q)	---	PLC	PLC-1
	Relays with PCB Terminals	PLE08-0	PLC-10	---	---
		PLE11-0	---	PLC-10	---

Safety Precautions

Refer to the *Common Relay Precautions* for precautions that apply to all Relays.

Precautions for Correct Use

Installation Orientation

There is no specified installation orientation.

About the Built-in Diodes*

The diodes that are built into the Relays are designed to absorb reverse voltage from the Relay's coil. If a large surge in voltage is applied to the diode from an external source, the element will be destroyed.
If there is the possibility of large voltage surges that could be applied to the elements from an external source, take any necessary surge absorption measures.
✻ The MK Series does not have any models with a built-in CR circuit.

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2025.12

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