

## General-purpose Relay

## MK-I/-S

### Exceptionally Reliable General-purpose Relay features Mechanical Indicator/Test Button

Breaks relatively large load currents despite small size.

Built-in operation indicator (mechanical, LED), test button types available as standard.

Diode surge suppression and varistor surge suppression types available on a lead time.



## Ordering Information

Terminal	Contact form	With mechanical indicator	With mechanical indicator and pushbutton	With mechanical indicator, LED indicator and pushbutton	Available coil voltages
Plug-in	DPDT	MK2P-I	MK2P-S	MK2PN-S	12 VAC, 24 VAC, 48 VAC, 110 VAC, 230 VAC, 12 VDC, 24 VDC, 48 VDC, 110 VDC
	3PDT	MK3P5-I	MK3P5-S	MK3PN-5-S	

**Note:** When ordering, add the rated coil voltage to the model number, from the available coil voltage column.

Example: MK3P5-S – 230 VAC

Rated coil voltage

### ■ Accessories (Order separately)

Description	Socket for 2 pole relay	Socket for 3 pole relay	Clips (pair)
DIN rail/surface mounting socket	PF083A-E	PF113A-E	PFC-A1
Solder terminals	PL08	PL11	
PCB mounting socket	PLE08-0	PLE11-0	

**Note:** For dimensions, see Section 16.

## Specifications

### ■ Coil Ratings

Rated voltage		Rated current		Coil resistance	Must operate voltage	Must release voltage	Max. voltage	Power consumption
		60 Hz	50 Hz					
AC	12 VAC	180 mA	202 mA	16.9Ω	80% max. of rated voltage	30% min. of rated voltage	110% of rated voltage	Approx. 2.3 VA (at 60 Hz) Approx. 2.7 VA (at 50 Hz)
	24 VAC	88 mA	98 mA	62Ω				
	48 VAC	39 mA	46.3 mA	330Ω				
	110 VAC	21 mA	24.7 mA	1,240Ω				
	230 VAC	10.5 mA	12.3 mA	6,170Ω				
DC	12 VDC	126 mA		95Ω		15% min. of rated voltage		Approx. 1.5 W
	24 VDC	56 mA		430Ω				
	48 VDC	29.5 mA		1,630Ω				
	110 VDC	15.1 mA		6,800Ω				

**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. Performance characteristics data are measured at a coil temperature of 23°C.

3. For 200 VDC applications, a 100 VDC relay is supplied with a fixed 6.8 kΩ, 30 W resistor. Be sure to connect the resistor in series with the coil.

4. For models with the LED indicator built-in, add an LED current of approximately 0 through 5 mA to the rated current.

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## ■ Contact Ratings

Load	Resistive load ( $\cos\phi=1$ )	Inductive load ( $\cos\phi=0.4$ )
Rated load	10 A at 250 VAC (NO) 5 A at 250 VAC (NO) 10 A at 28 VDC (NO) 5 A at 28 VDC (NC)	7 A at 250 VAC (NO)
Rated carry current	10 A	
Max. switching voltage	250 VAC, 250 VDC	
Max. switching current	10 A	
Max. switching power	2,500 VA, 280 W 1,250 VA, 140 W	1750 VA
Min. permissible load	10 mA at 1 VDC	

**Note:** When using both NO and NC contacts, break 10 A with NO contact and 5 A with NC contact. When using only NO contact, break 7 A.

## ■ Characteristics

Contact resistance	50 mΩ max.
Operate time	AC: 20 ms max.; DC: 30 ms max.
Release time	20 ms max.
Max. operating frequency	Mechanical: 18,000 operations/hr Electrical: 1,800 operations/hr (under rated load)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric withstand voltage	2,500 VAC, 50/60 Hz for 1 min. between coil and contacts; 1,000 VAC, 50/60 Hz for 1 min. between contacts of same polarity, terminals of the same polarity; 2,500 VAC, 50/60 Hz for 1 min. between current-carrying parts, non-current-carrying parts and terminals of opposite polarity
Vibration resistance	Destruction: 10 to 55 Hz, 1.5 mm double amplitude Malfunction: 10 to 55 Hz, 1 mm double amplitude
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 100 G) Malfunction: 100 m/s <sup>2</sup> (approx. 10 G)
Life expectancy	Destruction: 10,000,000 operations min. (at operating frequency of 18,000 operations/hr) Electrical: Refer to 'Engineering Data'
Ambient temperature	Operating: -10° to 40°C (with no icing)
Ambient humidity	35% to 85%
Weight	Approx. 85 g

**Note:** The data shown above are initial values.

## ■ Approved Standards

UL 508 (File No. E41515)

CSA 22.2 No. 0/14 (File No. LR335535)

SEV 1025-1.84 (File No. 89,1 00090, 02)

VDE 0435 (File No. 5340)

TUV (IEC 255 (File No. R 9051410)

DEMKO (File No. 92321HK)

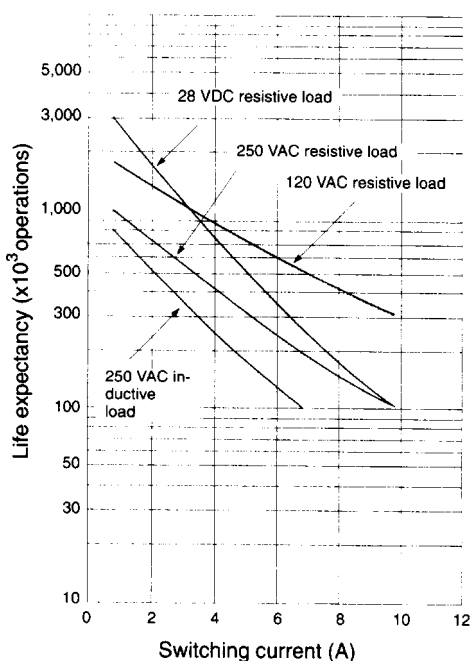
NEMKO (File No. L86798)

**Note:** The rated values approved by each of the safety standards may differ from the performance characteristics individually defined in this catalogue.

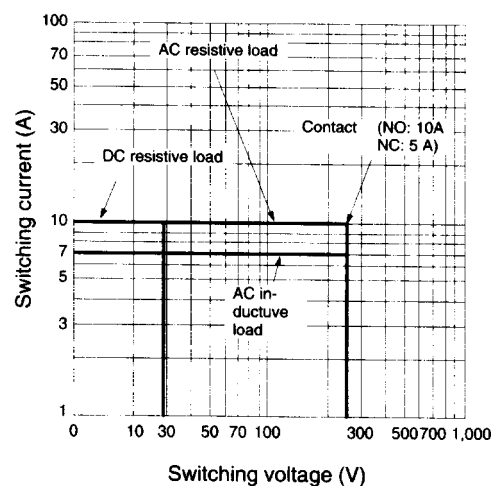
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# Engineering Data

## Electrical Life Expectancy

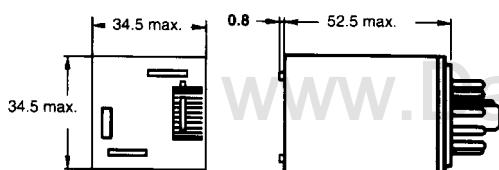


## Maximum Switching Capacity



## Dimensions

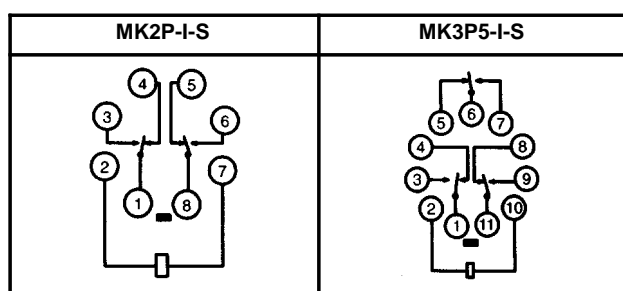
**Note:** All units are in millimetres unless otherwise indicated.



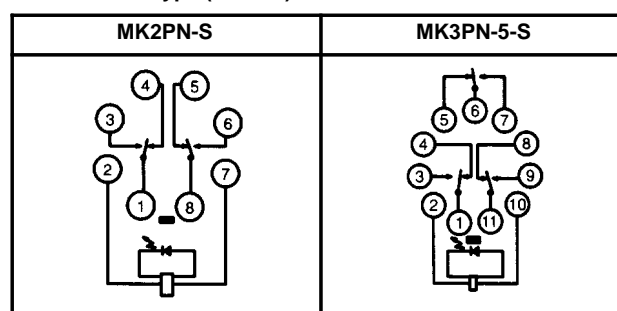
## Installation

### ■ Terminal Arrangement/Internal Connection (bottom view)

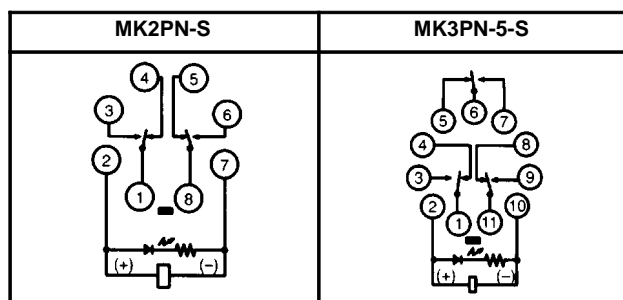
AC/DC coil



LED Indicator type (AC coil)



LED Indicator type (DC coil)



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