## **General-purpose Relays**

## MK-S (New Models)

CSM\_MK-S\_DS\_E\_6\_1

(F) c**71** us 🛕

## **New Super MK Relays.** Models with Latching Lever Added to the Series.

- Same mounting and internal wiring as the previous Super
- Built-in mechanical indicator enables checking contact operation.
- Two modes can be used to check circuits for models with
- Nameplate provided on models with latching lever.
- All materials are RoHS compliant.
- UL and IEC (TÜV) certification.



#### **Features**

#### **Models with Latching Lever**



\* The operation indicator is built in only on specified models.

#### **Example of Applications of Models with Latching** Levers

Operation checks in relay sequence circuits

#### **Operating Method for Latching Lever**

Relay in **Normal Operation** 



Operation

For Momentary

Operation

Yellow





insulated tool to

operate the contact.



For Lock

Slide the latching lever to the second (The contact is now in the locked position.)

#### **Model Number Structure**

#### **Model Number Legend**



1 2 3 4 5 6 7

1. Contact Form

2: DPDT

3: 3PDT

2. Terminals

P: Plug-in

3. Mechanical Indicator/Test Button

Blank: Mechanical indicator

Mechanical indicator and lockable test button

4. LED Indicator

Blank: Standard LED indicator N٠

#### 5. Coil Polarity

Blank: Standard

Reverse polarity (DC coil only)

6. Surge Absorption

Surge absorber diode (DC coil only) Surge absorber varistor (AC coil only)

7. Internal Connections

Blank: Standard

2 or 5: Non-standard connections (Refer to "Terminal Arrangement and Internal Connection (Bottom View)".)

8. Rated Voltage

(Refer to "Coil Ratings".)

## **Ordering Information**

## **List of Models**

Туре	Terminals	Contact form	Internal connections (See note 3.)	With mechanical indicator	With mechanical indicator and lockable test button	Coil ratings			
		DPDT	Standard	MKS2P	MKS2PI				
Standard Models		וטפטו	Non-standard	MKS2P-2	MKS2PI-2				
			Standard	MKS3P	MKS3PI	AC/DC			
Wodels		3PDT	Non Ctandard	MKS3P-2	MKS3PI-2				
			Non-Standard	MKS3P-5	MKS3PI-5				
		DPDT	Standard	MKS2PN(1)	MKS2PIN(1)				
Models with		DPD1	Non-standard	MKS2PN(1)-2	MKS2PIN(1)-2				
<b>LED Indicator</b>			Standard	MKS3PN(1)	MKS3PIN(1)	AC/DC			
(See note 2.)		3PDT	Non Otomoloud	MKS3PN(1)-2	MKS3PIN(1)-2				
			Non-Standard	MKS3PN(1)-5	MKS3PIN(1)-5				
		DDDT	Standard	MKS2P(1)-D	MKS2PI(1)-D				
Models with		DPDT	Non-standard	MKS2P(1)-D-2	MKS2PI(1)-D-2				
Diode	Diamin	3PDT	Standard	MKS3P(1)-D	MKS3PI(1)-D	DC			
(See note 2.)			Non-Standard	MKS3P(1)-D-2	MKS3PI(1)-D-2				
				MKS3P(1)-D-5	MKS3PI(1)-D-5				
	Plug-in	DDDT	Standard	MKS2PN-D	MKS2PIN-D	DC			
Models with	r	DPDT	Non-standard	MKS2PN-D-2	MKS2PIN-D-2				
LED Indicator			Standard	MKS3PN-D	MKS3PIN-D				
and Diode		3PDT	3PDT	3PDT	3PDT	Non Ctandard	MKS3PN-D-2	MKS3PIN-D-2	
			Non-Standard	MKS3PN-D-5	MKS3PIN-D-5	1			
		DPDT	Standard	MKS2P-V	MKS2PI-V				
		DPDT	Non-standard	MKS2P-V-2	MKS2PI-V-2				
Models with Varistor			Standard	MKS3P-V	MKS3PI-V	AC			
Variotor		3PDT	Non-Standard	MKS3P-V-2	MKS3PI-V-2				
			Non-Standard	MKS3P-V-5	MKS3PI-V-5				
Models with LED Indicator and Varistor		DPDT	Standard	MKS2PN-V	MKS2PIN-V				
		וטרטו	Non-standard	MKS2PN-V-2	MKS2PIN-V-2				
			Standard	MKS3PN-V	MKS3PIN-V	AC			
		3PDT	Non-Standard	MKS3PN-V-2	MKS3PIN-V-2				
						เพอก-อเลกนสาน	MKS3PN-V-5	MKS3PIN-V-5	1

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

Example: MKS3P 24 VDC

Rated voltage

2.	The DC coil comes in two types: standard coil polarity and reverse coil polarit
	Refer to Terminal Arrangement and Internal Connections (Bottom View).
	Example: MKS2PIN1-2 24 VDC
	Reverse coil polarity

3. Refer to Terminal Arrangement and Internal Connections (Bottom View) for non-standard internal connections.

## **List of Models (Order Separately)**

Item	Туре	Model
	8-pin	PF083A-E
Track-mounted	11-pin	PF113A-E
Socket	8-pin	PF083A-D
	11-pin	PF113A-D
Hold-down Clip (For PF083A-E and Pf	- -113A-E)	PFC-A1

## **Specifications**

## **Ratings Coil Ratings**

Data	al	Rated current 50 Hz 60 Hz		Onil registers	Must operate	Must release	May valtage	Power
Hate	d voltage			Coil resistance	voltage		Max. voltage	consumption
AC	6 V	443 mA	385 mA	3.1 Ω	80% max. of rated voltage			
	12 V	221 mA	193 mA	13.7 Ω			110% of rated voltage	
	24 V	110 mA	96.3 mA	48.4 Ω				
	100 V	26.6 mA	23.1 mA	760 Ω		30% min. of rated voltage at 60 Hz 25% min. of rated voltage at 50 Hz		Approx. 2.3 VA
	110 V	24.2 mA	21.0 mA	932 Ω				at 60 Hz Approx. 2.7 VA at 50 Hz
	200 V	13.3 mA	11.6 mA	3,160 Ω				
	220 V	12.1 mA	10.5 mA	$3,550~\Omega$				
	230 V	10.0 mA	11.5 mA	4,250 Ω				
	240 V	11.0 mA	9.6 mA	4,480 Ω				
	6 V	224 mA		26.7 Ω		15% min. of rated voltage		
	12 V	112 mA		107 Ω				Approx. 1.4 W
	24 V	55.8 mA		430 Ω				
DC	48 V	28.1 mA 13.5 mA 12.3 mA		1,710 Ω				
	100 V			7,390 Ω		voltage		
	110 V			8,960 Ω	<b>=</b>			
	125 V	10.8 mA	3 mA 11,576 Ω		1			

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 characteristic data are measured at a coil temperature of 23°C.

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#### **Contact Ratings**

Load		Resistive load (cosφ = 1)	Inductive load (cos\phi = 0.4)	
Contact mechanism		Single		
Contact material		AgSnIn		
Rated load	NO	10 A, 250 VAC 10A, 30 VDC	7 A. 250 VAC	
Hated load	NC	5 A, 250 VAC 5 A, 30 VDC	7 A, 250 VAC	
Rated carry current		10 A		
Max. switching voltage		250 VAC, 250 VDC		
Max. switching current		10 A		
Max. switching power NO		2,500 VA/300 W		
		1,250 VA/150 W		

#### **Characteristics**

Contact resistance	100 m0 mov				
Contact resistance	100 m $Ω$ max.				
Operate time	AC: 20 ms max. DC: 30 ms max.				
Release time	20 ms max. (40 ms max. for built-in Diode Relays)				
Max. operating frequency	Mechanical: 18,000 operations/h Electrical: 1,800 operations/h (under rated load)				
Insulation resistance	100 MΩ min. (at 500 VDC)				
Dielectric strength	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 and terminals of the same polarity 2,500 VAC 50/60 Hz for 1 min between current-carrying parts, non-current-carrying parts, and opposite polarity				
Insulation method	Basic insulation				
Impulse withstand voltage	4.5 kV between coil and contacts (with 1.2 $\times$ 50 $\mu$ s impulse wave) 3.0 kV between contacts of different polarity (with 1.2 $\times$ 50 $\mu$ s impulse wave)				
Pollution degree	3				
Rated insulation voltage	250 V				
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/s² (approx. 100 G) Malfunction: 100 m/s² (approx. 10 G)				
Endurance	Mechanical: 5,000,000 operations min. (at 18,000 operations/h under rated load) Electrical: 100,000 operations h. (at 1,800 operations/h under rated load)				
Failure rate P level (reference value)	10 mA at 1 VDC				
Ambient temperature	Operating: -40 to 60°C (with no icing or condensation)				
Ambient humidity	Operating: 5% to 85%				
Weight	Approx. 90 g				

Note: 1. The values given above are initial values.
2. P level: λ<sub>60</sub> = 0.1 × 10<sup>-6</sup>/operation
3. Ambient temperature of models with LED indicator is -25 to 60°C.

#### **Approved Standards** UL508 (File No. E41515) QNU us

Coil ratings		Contact ratings	Operations
6 to 110 VDC	N.O. contact	10 A, 250 V AC 50/60 Hz (Resistive) 10 A, 30 V DC (Resistive) 7 A, 250 V AC 50/60 Hz (General Use)	100,000
6 to 240 VAC	N.C. contact	10 A, 250 V AC 50/60 Hz (Resistive) 10 A, 30 V DC (Resistive) 7 A, 250 V AC 50/60 Hz (General Use)	100,000

#### CSA Standard: CSA C22.2 No. 14 (File No. LR35535) (1)

Coil ratings	Coil ratings Number of Poles Contact ratings		Operations
	2	10 A, 250 V AC (Resistive) 10 A, 30 V DC (Resistive) 7 A, 250 V AC (General Use)	100,000
6 to 125 VDC 6 to 240 VAC	3	10 A, 250 V AC (Resistive) Same Polarity 10 A, 30 V DC (Resistive) Same Polarity 7 A, 250 V AC (General Use) Same Polarity	100,000

#### IEC Standard/TÜV Certification: IEC61810-1 (Certification No. R50104853) 🛕

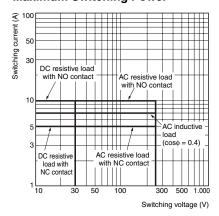
Coil ratings		Contact ratings	Operations
6, 12, 24, 48, 100, 110 VDC 6, 12, 24, 100,	N.O. contact	10 A, 250 V AC 50/60 Hz (Resistive) 10 A, 30 V DC (Resistive) 7 A, 250 V AC 50/60 Hz (General Use)	100,000
110, 200, 220, 240 VAC	N.C. contact	5 A, 250 V AC 50/60 Hz (Resistive) 5 A, 30 V DC (Resistive) 7 A, 250 V AC 50/60 Hz (General Use)	100,000

Note: When Relays are mounted on the PF083A-E or PF113A-E, the maximum carrying current is 9 A.

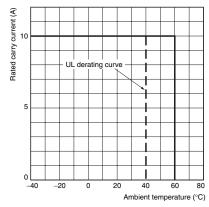
## **Engineering Data**

#### **Reference Data**

#### **Maximum Switching Power**



#### **Rated Carry Current vs. Ambient Rated Temperature**

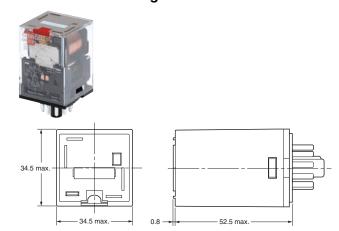


Note: The lower limit of the ambient operating temperature for models with built-in operation indicators is -25°C.

**Dimensions** (Unit: mm)

#### **Models without Latching Lever**

#### **Models with Latching Lever**



#### **Sockets**

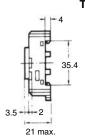
See below for Socket dimensions.

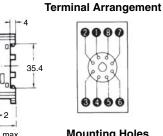
Socket	Surface-mounting Socket (for track or screw mounting)			
Socket	Finger-prote			
Maximum carry current	10 A		5 A	
	PF083A-E	PF083A-D	PF083A	
2 poles				
	PF113A-E	PF113A-E-D	PF113A	
3 poles				

Note: Use the Surface-mounting Sockets (i.e., finger-protection models) with "-E" at the end of the model number. When using the PF083A and PF113A, be sure not to exceed the Socket's maximum carry current of 5 A. Using at a current exceeding 5 A may lead to burning. Round terminals cannot be used for finger-protection models. Use Y-shaped terminals.

#### PF083A-E (Conforming to EN 50022)

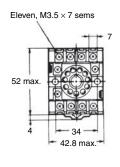
# 52 max 41 max.

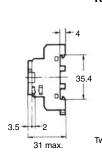


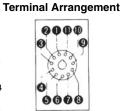




#### PF113A-E (Conforming to EN 50022)

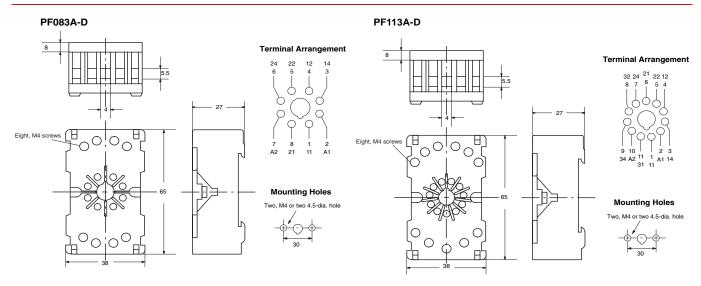






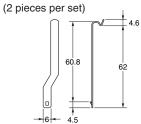
**Mounting Holes** Two, M4 or two 4.5-dia. holes

33±0.2



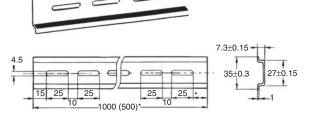
#### **Hold-down Clips**

PFC-A1



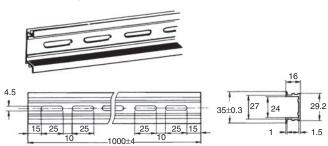
#### **Mounting Tracks**

PFP-100N, PFP-50N (Conforming to EN 50022)



 $\ensuremath{\bigstar}$  This dimension applies to the PFP-50N Mounting Track.

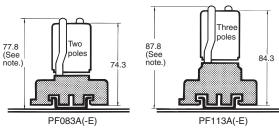
#### PFP-100N2 (Conforming to EN 50022)



A total of twelve 25 × 4.5 elliptic holes is provided with six holes cut from each track end at a pitch of 10 mm.

#### **Mounting Height with Sockets**

#### **Surface-mounting Sockets**

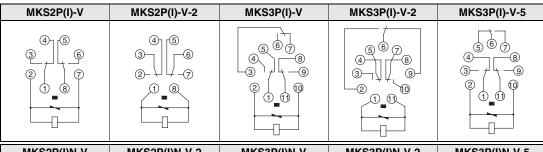


Note: PF083A(-E) and PF113A(-E) allow either track or screw mounting.

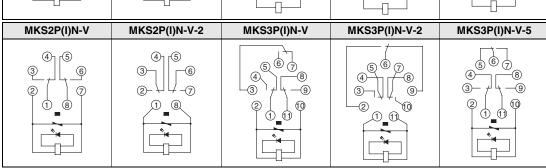
## **Terminal Arrangement and Internal Connection (Bottom View)**

				<u> </u>			
Standard Models	MKS2P(I)	MKS2P(I)-2	MKS3P(I)	MKS3P(I)-2	MKS3P(I)-5		
(AC/DC Coil)	(4) (5) (6) (7) (8) (9) (1) (8) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1		\$ 0 7 8 3 9 0 10 10 10 10 10 10 10 10 10 10 10 10 1				
Models with	MKS2P(I)N	MKS2P(I)N-2	MKS3P(I)N	MKS3P(I)N-2	MKS3P(I)N-5		
LED Indicator (AC Coil)			\$ 6 7 8 9 0 10 10 10 10 10 10 10 10 10 10 10 10 1		\$ 6 7 4 8 3 - 9 2 1 0		
Models with Diode	MKS2P(I)N	MKS2P(I)N-2	MKS3P(I)N	MKS3P(I)N-2	MKS3P(I)N-5		
(DC Coil: Standard Polarity)							
Models with	MKS2P(I)N1	MKS2P(I)N1-2	MKS3P(I)N1	MKS3P(I)N1-2	MKS3P(I)N1-5		
LED Indicator and Diode (DC Coil: Reverse Polarity)					\$ 6 7 4 8 3 - 1 9 2 10 (-) (+)		
Standard Models	MKS2P(I)-D	MKS2P(I)-D-2	MKS3P(I)-D	MKS3P(I)-D-2	MKS3P(I)-D-5		
(DC Coil: Standard Polarity)	(4) (5) (6) (7) (7) (8) (+) (-)	4 6 3 6 2 - 7	\$ 6 7 4 8 3 9 2 1 10				
Models with Diode	MKS2P(I)1-D	MKS2P(I)1-D-2	MKS3P(I)1-D	MKS3P(I)1-D-2	MKS3P(I)1-D-5		
(DC Coil: Reverse Polarity)			(5) (6) (7) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9		\$ 6 7 4 8 3 - 4 9 2 0 (-) (+)		
Models with	MKS2P(I)N-D	MKS2P(I)N-D-2	MKS3P(I)N-D	MKS3P(I)N-D-2	MKS3P(I)N-D-5		
LED indicator (DC Coil)	4 5 6 7 7 8 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				\$ 6 7 8 3 - 1 9 2 10 10 10 10 10 10 10 10 10 10 10 10 10		

Models with Varistor (AC Coil)



Models with LED indicator and Varistor (AC Coil)



## **Safety Precautions**

Refer to Safety Precautions for All Relays.

#### **Safety Precautions for Correct Use**

#### Installation

Mount the MK-S with the marking at the bottom.

#### Handling

Check the coil polarity of models with built-in operation indicator (DC operation coil) and wire them correctly .

#### **Test Button**

Do not use the test button for any purpose other than testing. Be sure not to touch the test button accidentally as this will turn the contacts ON. Before using the test button, confirm that circuits, the load, and any other connected item will operate safely.

Check that the test button is released before turning ON relay circuits.

If the test button is pulled out too forcefully, it may bypass the momentary testing position and go straight into the locked position.

Use an insulated tool when you operate the test button.

Models with test buttons or LED indicators fulfill the requirements for reinforced insulation between live parts and the front of cover only when the Relay is in a complete condition, i.e. with the nameplate, nameplate frame, test button, and slider in place. If any of these parts are removed, only the requirements for basic insulation are fulfilled.

#### Read and Understand This Catalog

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- · Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
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- Systems, machines, and equipment that could present a risk to life or property.

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#### **Disclaimers**

#### **CHANGE IN SPECIFICATIONS**

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

#### **DIMENSIONS AND WEIGHTS**

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

#### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

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MKS2PIN AC120 MKS2P AC24 MKS2PI AC24 MKS2PI AC240 MKS2PI AC120 MKS2PN AC120 MKS2PN DC24 MKS2PI DC24 MKS3P AC120 MKS3P AC220 MKS3P AC220 MKS3P DC24 MKS3P-2 AC110 MKS3P-2 AC220 MKS3P-2 AC240 MKS3P-2 DC24 MKS3P-2 DC24 MKS3PI AC220 MKS3PI AC220 MKS3PI AC220 MKS3PI AC220 MKS3PI DC24 MKS2PI DC24

## **ПОСТАВКА** ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

многоканальный

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

#### Офис по работе с юридическими лицами:

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