General-purpose Relays
MK-S (New Models)

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

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

Features

Models with Latching Lever

Operation indicator *
Nameplate
Mechanical indicator
Latching lever
DC: Blue
AC: Red

* 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
For Momentary Operation
For Lock Operation

Slide the latching lever to the first position, then press the yellow button with an insulated tool to operate the contact.
Slide the latching lever to the second position. (The contact is now in the locked position.)

Model Number Structure

Model Number Legend

1. Contact Form
2: DPDT
3: 3PDT

2. Terminals
P: Plug-in

3. Mechanical Indicator/Test Button
Blank: Mechanical indicator
I: Mechanical indicator and lockable test button

4. LED Indicator
Blank: Standard
N: LED indicator

5. Coil Polarity
Blank: Standard
1: Reverse polarity (DC coil only)

6. Surge Absorption
Blank: Standard
D: Surge absorber diode (DC coil only)
V: 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”)

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.
## List of Models

<table>
<thead>
<tr>
<th>Type</th>
<th>Terminals</th>
<th>Contact form</th>
<th>Internal connections (See note 3.)</th>
<th>With mechanical indicator and lockable test button</th>
<th>Coil ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Models</strong>&lt;br&gt;&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2P</td>
<td>MKS2PI</td>
<td>AC/DC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3P</td>
<td>MKS3PI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Models with LED Indicator (See note 2.)</strong>&lt;br&gt;&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2PN(1)</td>
<td>MKS2PIN(1)</td>
<td>AC/DC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3PN(1)</td>
<td>MKS3PIN(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Models with Diode (See note 2.)</strong>&lt;br&gt;&lt;br&gt;Plug-in&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2P(1)-D</td>
<td>MKS2PI(1)-D</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3P(1)-D</td>
<td>MKS3PI(1)-D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Models with LED Indicator and Diode</strong>&lt;br&gt;&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2PN-D</td>
<td>MKS2PIN-D</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3PN-D</td>
<td>MKS3PIN-D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Models with Varistor</strong>&lt;br&gt;&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2P-V</td>
<td>MKS2PI-V</td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3P-V</td>
<td>MKS3PI-V</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Models with LED Indicator and Varistor</strong>&lt;br&gt;&lt;br&gt;DPDT&lt;br&gt;Standard</td>
<td>Standard</td>
<td>MKS2PN-V</td>
<td>MKS2PIN-V</td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td>3PDT&lt;br&gt;Non-standard</td>
<td>Standard</td>
<td>MKS3PN-V</td>
<td>MKS3PIN-V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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

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

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

## List of Models (Order Separately)

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track-mounted Socket&lt;br&gt;8-pin</td>
<td>PF083A-E</td>
<td></td>
</tr>
<tr>
<td>11-pin</td>
<td>PF113A-E</td>
<td></td>
</tr>
<tr>
<td>Hold-down Clip&lt;br&gt;(For PF083A-E and PF113A-E)</td>
<td>PFC-A1</td>
<td></td>
</tr>
</tbody>
</table>
Specifications

Ratings

Coil Ratings

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

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.
3. The maximum voltage is one that is applicable instantaneously to the Relay coil at 23°C and not continuously.
4. For DC-operated Relays with the LED indicator built-in, add an LED current of approx. 5 mA to the rated current.

Load

<table>
<thead>
<tr>
<th>Contact mechanism</th>
<th>Resistive load (cosφ = 1)</th>
<th>Inductive load (cosφ = 0.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rated load

| NO               | 10 A, 250 VAC 10A, 30 VDC | 7 A, 250 VAC |
| NC               | 5 A, 250 VAC 5 A, 30 VDC  |               |

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 NC 1,250 VA/150 W
Characteristics

Contact resistance: 100 mΩ 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 × 50 μs impulse wave)
- 3.0 kV between contacts of different polarity (with 1.2 × 50 μs 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: λ60 = 0.1 × 10⁻⁶/operation
3. Ambient temperature of models with LED indicator is –25 to 60 °C.

Approved Standards

UL508 (File No. E41515)
CSA Standard: CSA C22.2 No. 14 (File No. LR35535)
IEC Standard/TÜV Certification: IEC61810-1 (Certification No. R50104853)

Coil ratings

<table>
<thead>
<tr>
<th>Contact ratings</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 A, 250 V AC 50/60 Hz (Resistive)</td>
<td>100,000</td>
</tr>
<tr>
<td>10 A, 30 V DC (Resistive)</td>
<td></td>
</tr>
<tr>
<td>7 A, 250 V AC 50/60 Hz (General Use)</td>
<td></td>
</tr>
</tbody>
</table>

Coil ratings

<table>
<thead>
<tr>
<th>Contact ratings</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 A, 250 V AC (Resistive)</td>
<td>100,000</td>
</tr>
<tr>
<td>10 A, 30 V DC (Resistive)</td>
<td></td>
</tr>
<tr>
<td>7 A, 250 V AC (General Use)</td>
<td></td>
</tr>
</tbody>
</table>

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

### Models without Latching Lever

![Model Image]

### Models with Latching Lever

![Model Image]

### Sockets

See below for Socket dimensions.

<table>
<thead>
<tr>
<th>Socket</th>
<th>Surface-mounting Socket (for track or screw mounting)</th>
<th>Finger-protection models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum carry current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 A</td>
<td>PF083A-E</td>
<td>PF083A-D</td>
</tr>
<tr>
<td></td>
<td>PF083A</td>
<td></td>
</tr>
<tr>
<td>5 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 poles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PF113A-E</td>
<td>PF113A-E-D</td>
</tr>
<tr>
<td></td>
<td>PF113A</td>
<td></td>
</tr>
<tr>
<td>3 poles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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)**

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

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

- **Terminal Arrangement**
- **Mounting Holes**: Two, M4 or two 4.5-dia. holes
Hold-down Clips

PFC-A1
(2 pieces per set)

Mounting Tracks

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

PFP-100N2
(Conforming to EN 50022)

* This dimension applies to the PFP-50N Mounting Track.

Mounting Height with Sockets

Surface-mounting Sockets

PF083A(-E) and PF113A(-E) allow either track or screw mounting.
<table>
<thead>
<tr>
<th>Models</th>
<th>MKS2P(I)</th>
<th>MKS2P(I)-2</th>
<th>MKS3P(I)</th>
<th>MKS3P(I)-2</th>
<th>MKS3P(I)-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Models (AC/DC Coil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models with LED Indicator (AC Coil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models with Diode (DC Coil: Standard Polarity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models with LED Indicator and Diode (DC Coil: Reverse Polarity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Models (DC Coil: Standard Polarity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models with Diode (DC Coil: Reverse Polarity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models with LED Indicator (DC Coil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

[Diagram showing terminal arrangements and internal connections for different models of MKS series products.]

**Table of Models:**
- **MKS2P(I)**
- **MKS2P(I)-2**
- **MKS3P(I)**
- **MKS3P(I)-2**
- **MKS3P(I)-5**
- **MKS2P(I)N**
- **MKS2P(I)N-2**
- **MKS3P(I)N**
- **MKS3P(I)N-2**
- **MKS3P(I)N-5**
- **MKS2P(I)N1**
- **MKS2P(I)N1-2**
- **MKS3P(I)N1**
- **MKS3P(I)N1-2**
- **MKS3P(I)N1-5**
- **MKS2P(I)-D**
- **MKS2P(I)-D-2**
- **MKS3P(I)-D**
- **MKS3P(I)-D-2**
- **MKS3P(I)-D-5**
- **MKS2P(I)1-D**
- **MKS2P(I)1-D-2**
- **MKS3P(I)1-D**
- **MKS3P(I)1-D-2**
- **MKS3P(I)1-D-5**
- **MKS2P(I)N-D**
- **MKS2P(I)N-D-2**
- **MKS3P(I)N-D**
- **MKS3P(I)N-D-2**
- **MKS3P(I)N-D-5**
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.
WARRANTY
OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY
OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE
OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS
OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

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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