Compact Mechanical Lock Latching Relays with Manual Buttons

• Compact design with a height of 71 mm, width of 42.5 mm, and depth of 48.5 mm. Plus, one Relay only weighs 175 g.
• Quick set and reset response through pulse signals.
• Gold-plated contacts for high contact reliability.
• Compatible with OMRON’s PTF14A (for LY4 Relays) Sockets.

⚠️ Refer to the Common Relay Precautions.

Model Number Structure

Model Number Legend

G7K-

1. Number of Poles 2. Contact Configuration 3. Protective Structure 4. Terminal Shape
4: 4-pole (DPDT/DPST-NO) 1: Single contacts 2: Encased S: Relays with Plug-in Terminals

Ordering Information

List of Models

Models with Plug-in Terminals

<table>
<thead>
<tr>
<th>Classification</th>
<th>Contact configuration</th>
<th>DPDT, DPST-NO</th>
<th>Model</th>
<th>Rated voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard models</td>
<td>G7K-412S</td>
<td></td>
<td></td>
<td>24, 100, 110, 200, or 220 VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24, 48, 100, 110, or 125 VDC</td>
</tr>
</tbody>
</table>

Note: Models are also available with built-in diodes for reverse voltage absorption. Contact your OMRON representative for details.

Options (Order Separately)

<table>
<thead>
<tr>
<th>Model name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front-mounting Sockets</td>
<td>PTF14A</td>
</tr>
<tr>
<td>Hold-down Clips</td>
<td>PKC</td>
</tr>
</tbody>
</table>

Note: The above products must be ordered in sets of 10.
Ratings and Specifications

Ratings

Operating Coil

<table>
<thead>
<tr>
<th>Item</th>
<th>Rated voltage (V)</th>
<th>Rated current (mA)</th>
<th>Coil resistance (Ω)</th>
<th>Set voltage (V)</th>
<th>Reset voltage (V)</th>
<th>Maximum voltage (V)</th>
<th>Power consumption (VA, W)</th>
<th>Coefficient (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>94.6</td>
<td>94.2</td>
<td>86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>22.7</td>
<td>20.2</td>
<td>1,470</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>18.3</td>
<td>18.2</td>
<td>2,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>11.1</td>
<td>9.9</td>
<td>6,340</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>10.4</td>
<td>9.2</td>
<td>7,190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>36.5</td>
<td>660</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>18.4</td>
<td>2,610</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>9.3</td>
<td>13,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>8.4</td>
<td>13,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>7.1</td>
<td>17,700</td>
<td></td>
<td></td>
<td></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% to ±20% for the AC rated current and ±15% for the DC coil resistance.
2. The AC coil resistance is a reference value only.
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 allowable voltage.

Contacts

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>Load</th>
<th>Inductive load (cos φ = 0.4, L/R = 7 ms)</th>
<th>Resistive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated load</td>
<td>G7K-412S</td>
<td>3 A at 220 VAC, 1 A at 110 VDC</td>
<td>1 A at 220 VAC, 1 A at 30 VDC</td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>Single</td>
<td>9 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum contact voltage</td>
<td>250 VAC, 125 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum current</td>
<td>110 W</td>
<td>30 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum switching capacity (reference value)</td>
<td>660 VA</td>
<td>220 VA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Characteristics

- Contact resistance: 50 mΩ max.
- Set coil: 100 ms
- Reset coil: 30 ms
- Maximum voltage (VDC): 100 V
- Rated current: 1.5 A at 220 VAC, 1.5 A at 110 VDC
- Rated load: 1,800 operations/hr

Engineering Data

Maximum Switching Capacity

G7K-412S

Ambient Temperature and the Set and Reset Voltages

G7K AC (60 Hz)

G7K VC (50 Hz)

Endurance Curve

G7K-412S

G7K DC

G7K DC
Malfuctioning Shock

G7K-412S 100 VAC

Vibration Resistance Unintended Operation Vibration

G7K-412S 100 VAC

N = 3
Measurement: Shock was applied 3 times each in 6 directions along 3 axes with the Relay set and reset to check the shock values that cause the Relay to malfunction.
Criteria: 30 m/s²

N = 5
Measurement: Vibration was applied for 10 minutes each in 3 directions along 3 axes with the Relay set and reset to check the vibration frequency and amplitude values that cause the Relay to malfunction.
Criteria: 10 to 22 to 10 Hz, 0.5-mm single amplitude (1.0-mm double amplitude) vibrations must not cause error in operation.

Dimensions

List of Models

G7K-412S

Connection Sockets
(Refer to Common Socket and DIN Track Products for external dimensions.

<table>
<thead>
<tr>
<th>Sockets</th>
<th>Front-mounting Sockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>G7K-412S</td>
<td>PTF14A</td>
</tr>
<tr>
<td></td>
<td>PTF14A-E</td>
</tr>
</tbody>
</table>

Relay Hold-down Clips
(Refer to Common Socket and DIN Track Products for external dimensions.
Secure the Relay with the Hold-down Clips to prevent the Relay from falling out due to vibration or shock.

PKC
Connection Sockets (Sold Separately)

PTF14A

Front-mounting Sockets

Note:
1. PTF14A Sockets have a rating of 10 A at 240 V max., but the G7K-412S has a carry current of 3 A. Use the Sockets within the contact ratings.
2. Use the PKC1 Hold-down Clips (2 per set) for the G7K and PTF14A.
3. Insert the Hold-down Clips into the PTF14A Socket and confirm that the Hold-down Clips cannot be pulled out before using them.
4. The set and reset buttons have different colors for easy identification.
   - Set button: Green
   - Reset button: Yellow
5. If you use screws to secure the connection to a Front-mounting Socket, either use appropriate connection terminals, such as a crimp terminals, or be sure to tighten the screws securely so that the wiring is not loose.
   - The proper tightening torque is 0.78 to 1.18 N·m.
6. Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force (2 N or more). Prepare the terminals properly and make sure that there are no whiskers that could cause short circuits.

Safety Precautions

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

Precautions for Correct Use

Installation
- Mount a Relay so that the operation confirmation button is facing up.
- Operation errors can occur if heat is not dissipated smoothly from the Relay. Therefore, when mounting two or more Relays parallel to each other, stagger each one by 20 mm vertically and 15 mm horizontally to create enough space for heat dissipation.

Circuit Conditions
- You cannot use your own contacts to degauss set and reset coils or use the Relays in self-degaussing circuits. (Figure 1 and Figure 2)
- Do not apply a voltage to the set and reset coils at the same time. If you apply a voltage to both coils simultaneously, the Relay will be set.
- There is usually no reason to use a Latching Relay with a constant current flow because the Relay can be latched with a single pulse. Using only a single pulse is also beneficial to reduce power consumption.

- NC contacts may open for a few milliseconds when the reset coil is turned ON or OFF. NO contact may also open when a set coil in the set state turns ON or OFF. Consider this in your circuit designs. (Figure 3)
- DC load operation can produce a blue-green corrosion inside the Relay case. Be careful when performing maintenance during application.
- The minimum pulse width is 100 ms, but the recommended width is approx. 1 s min.

Test Buttons
- Be careful when operating the manual test buttons. Be careful not to press the test button by mistake because the contacts will go ON if the test button is pressed.
- Use the test button for test purposes only.
- Press the green test button to set the Relay. Press the yellow test button to reset the Relay.
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