Safety Key Selector Switch
A22TK

ONE KEY, BEST SAFETY.
Achieve total safety when performing maintenance
Use of a common key further enhances safety and prevents operators from being trapped inside the hazardous area.

Because the A22TK Safety Key Selector Switch uses the same key as the Guard Lock Safety-door Switch, the operator is prevented from forgetting to remove the key. The result is a safer working environment when performing maintenance.

OMRON’s full line of safety components includes the Safety Key Selector Switch and Guard Lock Safety-door Switch, as well as the Enabling Grip Switch, which is essential for making emergency stops when performing teaching. A pre-packaged maintenance mode circuit makes it easy to create a safety circuit, contributing to the total safety of operators.

“Total safety support including device startup prevention at maintenance time” that only OMRON can provide

OMRON’s full line of safety components includes the Safety Key Selector Switch and Guard Lock Safety-door Switch, as well as the Enabling Grip Switch, which is essential for making emergency stops when performing teaching. A pre-packaged maintenance mode circuit makes it easy to create a safety circuit, contributing to the total safety of operators.

Common Key for Door Switch and Selector Switch

Guard Lock Safety-door Switch
D4GL-SK10-LK
A22TK
D4JL

Safety Key Selector Switch

D4GL-SK10-LK
A22TK
D4JL

Safety Controllers such as Safety Guard Switching Unit
G9SX-GS

† To unify keys, specify the same key type.

Broad range of applications include use with door locks, mode switching, and emergency stops when teaching

With the Selector Switch, it is possible to switch between normal operation mode (use of Door Switch is available) and maintenance mode (use of Enabling Grip Switch is available).
I take the key with me when I enter, so there is no worry of becoming trapped inside!

Guard Lock Safety-door Switch only
When only the Door Switch is used, the operator is at risk of being shut inside the barrier if, for example, he/she forgets to remove the trapped key and a third party locks the door. The equipment may also be started up while the operator is inside.

Assumed risks
- Forgetting to remove the key
- Being trapped inside
- Starting equipment

Guard Lock Safety-door Switch + Key Selector Switch (A22K)
The safety level is enhanced by switching to maintenance mode. However, because two different types of keys are required, the operator is still at risk of being shut inside if he/she forgets to remove the trapped key.

Assumed risks
- Forgetting to remove the key
- Being trapped inside

By using a common key, the risk of human error is reduced in operations from when the door is open/shut until the equipment is started.

Guard Lock Safety-door Switch + Safety Key Selector Switch (A22TK) NEW
The two locks on the door and equipment use the same key, reducing the likelihood that the user will forget to remove it. In addition, the key cannot be removed when maintenance is being performed. This prevents the key from being lost and greatly reduces the risk of an operator becoming trapped inside.

Common key

1. Unlock the door
   - Operation stopped

2. Start maintenance
   - Operation double-stopped

3. End maintenance
   - Operation stopped

4. Lock the door
   - Operation starts

Furthermore
By using the Enabling Grip Switch during maintenance and by using a Safety Laser Scanner or Safety Mat to detect the presence of operators, equipment malfunctions can be prevented when operators are inside, enabling a higher safety level.
Safety Key Selector Switch
A22TK

Key-type Selector Switch with Direct Opening Mechanism

- Selector Switch for secure equipment activation during maintenance
- 30 types of exclusive keys make it more difficult to disable.
- The trapped key of the D4JL Guard Lock Safety-door Switch has the same shape as the lockout key of the D4GL-SK10-LK Slide Key Unit. Units can be combined to improve safety. (Specify the same key type.)
- Common to the switch part of Emergency Stop Switch A22E. (Non-lighted model only)

Model Number Structure

Model Number Legend (Ordering as a set)
The Operation Unit and Switch are delivered as a set. For information on combinations, refer to Ordering Information on page 6.

For safety precautions for all pushbutton switches, refer to the website at: www.ja.omron.com, and “Safety Precautions” on page 13 in this catalog.

A22TK - 2LL - 12 - K 01

(1) Operation Unit

<table>
<thead>
<tr>
<th>Symbol</th>
<th>No. of notches</th>
<th>Key release position</th>
<th>Key position of NC contact closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2LL</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2RL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2LR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2RR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2) Contact Configuration

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>SPST-NC</td>
</tr>
<tr>
<td>11</td>
<td>SPST-NO/SPST-NC</td>
</tr>
<tr>
<td>02</td>
<td>DPST-NC</td>
</tr>
<tr>
<td>12</td>
<td>DPST-NC + SPST-NO</td>
</tr>
<tr>
<td>21</td>
<td>DPST-NO + SPST-NC</td>
</tr>
<tr>
<td>03</td>
<td>TPST-NC</td>
</tr>
</tbody>
</table>

(3) Key Availability

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No key</td>
</tr>
<tr>
<td>K</td>
<td>With key</td>
</tr>
</tbody>
</table>

(4) Key Type

01 to 30: 30 types *

Key can be created up to 30 types. Specify keys in order starting from 01.
## Contact Configuration

### A22TK-2L

<table>
<thead>
<tr>
<th>Key position</th>
<th>SPST-NC</th>
<th>SPST-NO/SPST-NC</th>
<th>DPST-NC</th>
<th>DPST-NC + SPST-NO</th>
<th>DPST-NO + SPST-NO</th>
<th>TPST-NC</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Key Position" /></td>
<td><img src="image2.png" alt="Contact Positions" /></td>
<td><img src="image3.png" alt="Contact Positions" /></td>
<td><img src="image4.png" alt="Contact Positions" /></td>
<td><img src="image5.png" alt="Contact Positions" /></td>
<td><img src="image6.png" alt="Contact Positions" /></td>
<td><img src="image7.png" alt="Contact Positions" /></td>
</tr>
</tbody>
</table>

### A22TK-2R

<table>
<thead>
<tr>
<th>Key position</th>
<th>SPST-NC</th>
<th>SPST-NO/SPST-NC</th>
<th>DPST-NC</th>
<th>DPST-NC + SPST-NO</th>
<th>DPST-NO + SPST-NO</th>
<th>TPST-NC</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image8.png" alt="Key Position" /></td>
<td><img src="image9.png" alt="Contact Positions" /></td>
<td><img src="image10.png" alt="Contact Positions" /></td>
<td><img src="image11.png" alt="Contact Positions" /></td>
<td><img src="image12.png" alt="Contact Positions" /></td>
<td><img src="image13.png" alt="Contact Positions" /></td>
<td><img src="image14.png" alt="Contact Positions" /></td>
</tr>
</tbody>
</table>

## Operation Angle

- FP : Free position
- TTP : Total travel position

The key stops between FP and TTP. In such case, contacts will not work as shown in the table above. Make sure to shift the key to the FP or TTP position to ensure contact switching and meet the direct opening operation characteristic.
A22TK

Ordering Information

Switch
List of Models (Completely Assembled) ... Shipped as a set which includes the Operation Unit and Switch. For the model with Operation Unit only, contact your OMRON representative.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Key release position</th>
<th>Key position of NC contact closing</th>
<th>Contact Configuration</th>
<th>Key availability</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td>SPST-NC</td>
<td>Yes</td>
<td>A22TK-2LL-01-K01</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
<td>SPST-NO/SPST-NC</td>
<td>A22TK-2LL-11-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
<td>DPST-NC</td>
<td>A22TK-2LL-02-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image10.png" alt="Image" /></td>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
<td>DPST-NC + SPST-NO</td>
<td>A22TK-2LL-12-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
<td><img src="image15.png" alt="Image" /></td>
<td>DPST-NO + SPST-NC</td>
<td>A22TK-2LL-21-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image16.png" alt="Image" /></td>
<td><img src="image17.png" alt="Image" /></td>
<td><img src="image18.png" alt="Image" /></td>
<td>TPST-NC</td>
<td>A22TK-2LL-03-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image19.png" alt="Image" /></td>
<td><img src="image20.png" alt="Image" /></td>
<td><img src="image21.png" alt="Image" /></td>
<td>SPST-NC</td>
<td>A22TK-2RL-01-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image22.png" alt="Image" /></td>
<td><img src="image23.png" alt="Image" /></td>
<td><img src="image24.png" alt="Image" /></td>
<td>SPST-NO/SPST-NC</td>
<td>A22TK-2RL-11-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image25.png" alt="Image" /></td>
<td><img src="image26.png" alt="Image" /></td>
<td><img src="image27.png" alt="Image" /></td>
<td>DPST-NC</td>
<td>A22TK-2RL-02-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image28.png" alt="Image" /></td>
<td><img src="image29.png" alt="Image" /></td>
<td><img src="image30.png" alt="Image" /></td>
<td>DPST-NC + SPST-NO</td>
<td>A22TK-2RL-12-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image31.png" alt="Image" /></td>
<td><img src="image32.png" alt="Image" /></td>
<td><img src="image33.png" alt="Image" /></td>
<td>DPST-NO + SPST-NC</td>
<td>A22TK-2RL-21-K01</td>
<td></td>
</tr>
<tr>
<td><img src="image34.png" alt="Image" /></td>
<td><img src="image35.png" alt="Image" /></td>
<td><img src="image36.png" alt="Image" /></td>
<td>TPST-NC</td>
<td>A22TK-2RL-03-K01</td>
<td></td>
</tr>
</tbody>
</table>

Note: OMRON will obtain the S-mark certification for the models above. For information on other models, contact your OMRON representative.

Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Appearance</th>
<th>Classification</th>
<th>Model</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Box</td>
<td><img src="image37.png" alt="Image" /></td>
<td>One hole, yellow box (for emergency stop)</td>
<td>A22Z-B101Y</td>
<td>Material: Polycarbonate resin</td>
</tr>
</tbody>
</table>

*For information on two-hole and three-hole control boxes, contact your OMRON representative.

Also, the Switch Block, Mounting Latch, Connector, and Lock Plate on page 502 of Safety Components Series Catalog 2009 can be used.
Specifications

Approved Standard Ratings

- UL, cUL (File No. E41515): 6 A at 220 VAC, 10 A at 110 VAC
- TÜV (EN60947-5-1) (Low Voltage Directive): 3 A at 220 VAC
- CCC (GB14048.5): 3 A at 240 VAC, 1.5 A at 24 VDC

Certified Standards

<table>
<thead>
<tr>
<th>Certification body</th>
<th>Standards</th>
<th>File No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL #1</td>
<td>UL508, C22.2 No.14</td>
<td>E41515</td>
</tr>
<tr>
<td>TÜV SÜD (certified direct opening mechanism)</td>
<td>EN60947-5-1</td>
<td>Inquire</td>
</tr>
<tr>
<td>CQC (CCC)</td>
<td>GB14048.5</td>
<td>2003010303070635</td>
</tr>
<tr>
<td>KOSHA</td>
<td>EN60947-5-1</td>
<td>To be acquired.</td>
</tr>
</tbody>
</table>

Note: Only models with NC contacts have a direct opening mechanism.

Note: 1. UL-certification for CSA C22.2 No. 14 and bears the mark.

Ratings

Contacts (Standard load)

<table>
<thead>
<tr>
<th>Rated carry current (A)</th>
<th>Rated voltage (V)</th>
<th>Rated current (A) AC15 (inductive load)</th>
<th>AC12 (resistive load)</th>
<th>DC13 (inductive load)</th>
<th>DC12 (resistive load)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>24 VAC</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td>3</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>440</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>24 VDC</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td>-</td>
<td>-</td>
<td>0.2</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>-</td>
<td>-</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Note: 1. Rated current values are determined according to the testing conditions. The above ratings were obtained by conducting tests under the following conditions.
   (1) Ambient temperature: 20°±2°C
   (2) Ambient humidity: 65±5% RH
   (3) Operating frequency: 20 operations/minute
   2. Minimum applicable load: 10 mA at 5 VDC

Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>A22TK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable operating frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>30 operations/minute max.</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>30 operations/minute max.</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between terminals of same polarity</td>
<td>2,500 VAC, 50/60 Hz for 1 min.</td>
<td></td>
</tr>
<tr>
<td>Between each terminal and ground</td>
<td>2,500 VAC, 50/60 Hz for 1 min.</td>
<td></td>
</tr>
<tr>
<td>Dielectric strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance #1</td>
<td></td>
<td>10 to 55 Hz, 1.5-mm double amplitude (within 1 ms)</td>
</tr>
<tr>
<td>Shock resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destruction</td>
<td>1000 m/s²</td>
<td></td>
</tr>
<tr>
<td>Malfunction #1</td>
<td>250 m/s² max.</td>
<td></td>
</tr>
<tr>
<td>Durability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>100,000 operations min.</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>100,000 operations min.</td>
<td></td>
</tr>
<tr>
<td>Ambient operating temperature #2</td>
<td></td>
<td>-20 to +70°C</td>
</tr>
<tr>
<td>Ambient operating humidity</td>
<td></td>
<td>35% to 85%RH</td>
</tr>
<tr>
<td>Ambient storage temperature</td>
<td></td>
<td>-40 to +70°C</td>
</tr>
<tr>
<td>Degree of protection</td>
<td></td>
<td>IP65 #3</td>
</tr>
<tr>
<td>Electric shock protection class</td>
<td>Class II</td>
<td></td>
</tr>
<tr>
<td>PTI (tracking characteristic)</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Degree of contamination</td>
<td>3 (EN60947-5-1)</td>
<td></td>
</tr>
</tbody>
</table>

#1. Malfunction within 1 ms.
#2. With no icing or condensation.
#3. The degree of protection from the front of the panel.

Note: 1. Do not allow the load current to exceed the rated value.
2. The contact ON/OFF timing is not synchronized. Confirm performance before application.
3. Once the contacts have been used to switch a load, however, they cannot be used to switch smaller loads. The contact surfaces will become rough once they have been used and contact reliability for smaller loads may be reduced.
**A22TK**

**Structure and Nomenclature**

*Two keys are provided.*

**Operation Unit**

**Switch**

**Contact Ratings**
- 10 A at 110 VAC (resistive load)
- 10 A at 24 VDC (resistive load)

**Contact Configuration**
- SPST-NC, SPST-NO/SPST-NC, DPST-NC, DPST-NC + SPST-NO, DPST-NO + SPST-NC, and TPST-NC

**Lock Plate (attached with the Switch)**
(Refer to "Mounting the Lock Plate" on page 13 for use.)

(The above figures are examples of the model with key.)
Dimensions
(A22TK-2LL)

Terminal Arrangement (Bottom View)

<table>
<thead>
<tr>
<th>2 Contacts</th>
<th>3 Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
</tbody>
</table>

Terminal Connection

<table>
<thead>
<tr>
<th>Type</th>
<th>Terminal connection (Bottom View)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-lighted</td>
<td>SPST-NO/SPST-NC</td>
</tr>
<tr>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>
**Application Examples**

**G9SX-BC**: Manual reset, cross fault detection: ON (category 4 wiring)

**G9SX-GS**: Manual reset, cross fault detection: ON (category 4 wiring), logical AND connection setting: AND

Off-delay time setting: Time is set.

Switching mode: Manual

External indicator diagnosis: Enabled

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**Timing Chart**

1. The G9SX-GS starts in operation mode.
2. The mode switches to maintenance mode.
3. The operator opens the door and performs maintenance work.
4. The Enabling Switch is gripped to the middle position.
5. The G9SX-GS starts in maintenance mode.
6. The G9SX-GS will stop when the Enabling Switch is released or gripped.
7. The G9SX-GS will start again after the door is closed and the mode is switched to operation mode.
8. The G9SX-GS will stop when the door is open while in operation mode.
9. The door is closed and the G9SX-GS starts again.
10. All the units will stop if the emergency stop is pressed.
G9SX-LM224 (24 VDC) (Guard lock safety-door switch (Mechanical lock), 2-channel safety limit switch input/2-channel enabling switch input/Auto reset) + G9SX-BC202 (24 VDC) (2-channel emergency stop switch input/Manual reset)

Note: This circuit diagram is for Category 3.

Timing Chart
Installation

Mounting to the Panel

(1) Preparing the Panel
- The panel dimensions are shown below.
- Recommended panel thickness: 1 to 5 mm.
- A Lock Ring is provided as a standard feature.
- When painting or coating the panel, make sure that the specified panel dimensions apply to the panel after painting or coating.

<table>
<thead>
<tr>
<th>22.3 dia.</th>
<th>2-R0.8MAX.</th>
<th>0.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.1 dia.</td>
<td>+0.4</td>
<td>0</td>
</tr>
<tr>
<td>22.3 dia.</td>
<td>+0.4</td>
<td>0</td>
</tr>
</tbody>
</table>

(2) Mounting the Operation Unit on the Panel
- Insert the Operation Unit from the front surface of the panel, insert the Lock Ring and the mounting ring from the terminal side, then tighten the ring. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.
- Tighten the mounting ring at a torque of 0.98 to 1.96 N·m.
- When using a Lock Ring, insert the projecting part into the lock slot, and then tighten the mounting ring.

(3) Mounting the Switch on the Operation Unit
- Insert the Operation Unit into the Switch Unit, aligning the arrow mark inscribed on the Case with the lever on the Switch Blocks, then move the lever in the direction indicated by the arrow in the following figure.

(4) Removing the Switch
- Move the lever in the direction indicated by the arrow in the following figure, then pull the Operation Unit or the Switch Blocks. Since the lever has a hole with an inside diameter of 6.5 mm, the lever can be moved in the specified direction by inserting a screwdriver into the hole and then moving the screwdriver.

Installing/Removing the Switch Blocks

(1) Installing the Switch Blocks
- Hook the small protrusion on the Mounting Latch into the groove on the other side of the lever, then push up the Switch Block in the direction indicated by the arrow in the figure below.

(2) Removing the Switch Blocks
- Insert a screwdriver between the Mounting Latch and the Switch Block, then push down the screwdriver in the direction indicated by the arrow in the following figure.

<table>
<thead>
<tr>
<th>Screwdriver</th>
<th>Flat-head screwdriver 3 to 6 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washer</td>
<td>Phillips screwdriver 3 to 6 mm dia.</td>
</tr>
</tbody>
</table>

Wiring
- Loosen the terminal screw from the Switch Unit until it completely comes off the groove, insert a screwdriver as shown in the following figure, then push up the washer in the direction indicated by the arrow to temporarily secure it. Now, a round crimp terminal can be connected. After inserting the terminal, tighten the screws to complete wiring.
Safety Precautions

Be sure to read the precautions for all pushbutton switches in the website at www.ia.omron.com.

⚠️ DANGER

Always confirm that safety functions are operational before starting operation. Wiring mistakes, setting mistakes, switch failure or other factors may prevent safety functions from operating. This may result in the machine continuing to operate, possibly resulting in human accidents.

⚠️ CAUTION

If the Operation Unit is separated from the Socket Unit, the equipment will not stop, creating a hazardous condition.

Secure the lever on the Socket Unit by using the A22Z-3380 Lock Plate so that the Operation Unit cannot be easily separated from the Socket Unit.

(Refer to “Mounting the Lock Plate” at the right.)

[Used in combination with a Slide Key]

The machine may operate, possibly causing injury. Do not disable safety function by using a spare door switch operation key or spare key with the door open.

[Used outside/inside hazardous area]

The machine may operate, possibly causing injury. Do not disable safety function by using a spare key outside or inside the hazardous area.

Precautions for Correct Use

Operating Environment

- This Switch is designed for use indoors.
- Do not use the Switch where corrosive gases (e.g., H₂S, SO₂, NH₃, HNO₃, or Cl₂) are present or in locations subject to high temperature and humidity. Doing so may result in damage to the Switch as a result of contact failure or corrosion.
- Do not use the Switch in any of the following locations.
  - Locations subject to extreme temperature changes
  - Locations subject to high humidity or condensation
  - Locations subject to excessive vibration
  - Locations where metal dust, processing waste, oil, or chemicals may enter through the protective door
  - Locations subject to detergents, thinners, or other solvents

Storage

- Do not store the Switch where corrosive gases (e.g., H₂S, SO₂, NH₃, HNO₃, or Cl₂) or dust is present, or in locations subject to high temperature or high humidity.

Mounting

- Do not tighten the mounting ring more than necessary using tools such as pointed-nose pliers. Doing so will damage the mounting ring. The tightening torque is 0.98 to 1.96 N·m.
- Recommended panel thickness: 1 to 5 mm.

Mounting the Lock Plate

1. Confirm that the lever on the Mounting Latch is on the side where the Operation Unit is secured and then insert the protrusion on the Lock Plate into the hole in the lever on the Mounting Latch.
2. Press the hole on the Lock Plate onto the protrusion on the Mounting Latch until it clicks into place.

After mounting the Lock Plate, check that the lever does not move.

Operating the Key

- When rotating the key to the total travel position or free position, the operating force must be 1.47 N·m max.
Wiring
- Terminal screws must be Phillips or slotted M3.5 screws with a square washer.
- The tightening torque is 1.08 to 1.27 N·m.
- Single wires, stranded wires, and crimp terminals can be connected to the Switch.
- Applicable Wiring Materials:
  - Twisted strands: 2 mm² max.
  - Solid wire: 1.6 mm dia. max.

Naked Crimp Terminals
- After wiring the Switch, maintain an appropriate clearance and creepage distance.
- Do not pull the lead wires with excessive force. Doing so may disconnect them.
- The cable cannot be bended repeatedly.
- When bending the cable, provide a bending radius of 45 mm min. so as not to damage the cable insulation or sheath. Excessive bending may cause fire or leakage current.

Crimp Terminals with Insulating Sheaths
- Operating Environment
  - The IP65 model is designed with a protective structure so that it will not sustain damage if it is subjected to water from any direction to the front of the panel.
  - The Switch is intended for indoor use only. Using the Switch outdoor may cause it to fail.

Using the Microload
Contact failure may occur if a Switch designed for a standard load is used to switch a microload. Use Switches within the application ranges shown in the following graph. Even within the application range, insert a contact protection circuit, if necessary, to prevent the reduction of life expectancy due to extreme wear on the contacts caused by loads where inrush current occurs when the contact is opened and closed.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% (λ 60) (conforming to JIS C5003).

The equation, \( \lambda = 0.5 \times 10^{-6}/\text{time} \), indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.

Others
- If the panel is to be coated, make sure that the panel meets the specified dimensions after coating.
- Due to the structure of the Switch, severe shock or vibration may cause malfunctions or damage to the Switch.
- Also, most Switches are made from resin and will be damaged if they come into contact with sharp objects. Particularly scratches on the Operation Unit may create visual and operational obtrusions.
- Handle the Switches with care, and do not throw or drop them.

- Do not place or drop heavy objects on the Switch.
- Do not operate the Switch with hard or sharp objects.
- Perform maintenance inspections periodically.
- Do not use the key switch to stop/start the machine.
- Mode switching by key must be performed by the operator specified in the operating manual.
- Apply load current not to exceed the rated value.
- The contact ON/OFF timing is not synchronized. Confirm performance before application.
READ AND UNDERSTAND THIS CATALOG
Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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   d. Delivery and shipping dates are estimates only; and
   e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.

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9. If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security for any order. If any payment is past due or in default, Buyer shall remit to Omron an amount equal to the purchase price of the Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which shall be stated by Omron to Buyer. Buyer shall in any event remain liable for any unpaid accounts.

10. Cancellation, Etc. Orders are subject to rescheduling or cancellation if Buyer indemnifies Omron against all related costs or expenses. Under no circumstances will Omron extend any credit to Buyer, other than that stated on the invoice or specified in writing by Omron to Buyer relating to the Products that are excluded from such credit, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent it from being sold to any other party.

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