Pushbutton Switch (Lighted/Non-Lighted) (Cylindrical 12-dia.)

## Pushbutton Switch Series with Cylindrical 20-mm $\times$ 12-dia. Body

- High-intensity uniform surface lighting.
- Round body enables easy hole making.
- Miniature size with excellent feeling of operation.


## RoHS Compliant

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## List of Models

Appearance

| Rectangular |
| :--- |
| Models |


| Square |
| :--- |
| Models |
| Round |
| Models |

A3CJ

When placing your order, specify the individual component part model numbers of the Pushbutton, Lamp (lighted models only), and Switch, as listed in the ordering tables below.
For information on combinations, refer to Ordering Information on page 3.


## Safety Precautions

## Refer to Safety Precautions for All Pushbutton Switches/Indicators.

## $\triangle$ CAUTION

Do not apply a voltage higher than the maximum rated operating voltage between the lamp terminals, as there is a risk that the incandescent lamp or LED lamp will be damaged, and the Pushbutton will be ejected.

When replacing the incandescent lamp, first turn OFF the power supply, and then wait 10 minutes before performing replacement, as the lamp is still hot immediately after the power is turned OFF, so there
 is a risk of burns.

## Precautions for Correct Use

## Mounting

- To prevent electric shock or a fire, always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance.
- Do not tighten the mounting ring excessively using pliers or a similar tool. Excessive tightening may damage the mounting ring. (Tightening torque: 0.20 to $0.39 \mathrm{~N} \cdot \mathrm{~m}$ )


## Wiring

- When wiring, use wires of a size appropriate for the applied voltage and carry current. Perform soldering correctly under the conditions given below. Using the Switch with the wires soldered incorrectly may cause the terminals to become abnormally hot and cause a fire.

1. Soldering iron tip temperature: $350^{\circ} \mathrm{C}$ max. within 3 seconds.
2. Dip soldering: At $350^{\circ} \mathrm{C}$ within 3 seconds.

Wait for one minute after soldering before exerting any external force on the solder.

- Use a non-corrosive rosin liquid for the flux.
- Perform wiring so that the wire sheaths do not come into contact with the Switch. If this is unavoidable, use wires that can withstand temperatures of $100^{\circ} \mathrm{C}$ min.
- After wiring to the Switch has been completed, ensure an appropriate insulation distance.


## Operating Environment

- Do not use in locations that are subject to dust, oil, or metal filings as these may penetrate the interior of the Switch and cause malfunction.


## Using Microloads

- Using a standard load switch for opening and closing a microload circuit may cause wear on the contacts. Use the switch within the operating range. (Refer to the diagram below.) Even when using microload models within the operating range shown below, if inrush current occurs when the contact is opened or closed, it may cause the contact surface to become rough, and so decrease life expectancy. Therefore, insert a contact protection circuit where necessary. The minimum applicable load is the N -level reference value. This value indicates the malfunction reference level for the reliability level of $60 \%(\lambda 60)$ (conforming to JIS C5003). The equation, $\lambda 60=0.5 \times 10^{-6} /$ times indicates that the estimated malfunction rate is less than $1 / 2,000,000$ with a reliability level of 60\%.



## LED

- Resistance to limit the LED current is provided internally and so an external resistance is not required.

| Rated voltage | Internal limiting resistance |
| :---: | :---: |
| 5 VDC | $33 \Omega$ |
| 12 VDC | $270 \Omega$ |
| 24 VDC | $1,600 \Omega$ |

## Application

## Mounting and Replacing the Pushbutton

(1) Mounting Direction for the Pushbutton/Display and Lamp

Lighted Pushbutton Switch

- Insert the Lamp (incandescent lamp or LED lamp) into the Pushbutton so that the lamp guide fits into the wider gap between the projections on the Pushbutton.


Indicator

- With Indicators, the Lamp is inserted facing the opposite direction (i.e., at $180^{\circ}$ ) to that for Lighted Pushbutton Switches.


Note: Push the projections on the Lamp into the grooves on the Pushbutton/ Display.
The Lamp for Lighted Pushbutton Switches moves, but the Lamp for Indicators is fixed.
(2) Mounting Direction for the Pushbutton/Display and Switch

- Insert the Pushbutton/Display into the Switch so that the lamp guide is aligned with the non-projecting part of the Switch.
- Apply a pressure between 9.8 and 24.5 N .


Note: 1. The mounting direction for Indicators is $180^{\circ}$ to that for Lighted Pushbutton Switches. Be sure to insert the Legend Plate and other parts with the correct orientation.
2. If the terminals of the Lamp become bent, it may be impossible to fit them into the lamp terminal holes. Ensure that the terminals are straight when they are inserted.
3. Take particular care about the mounting direction with the round models (A3CT).
(3) Removing the Pushbutton/Display

Hold the recessed portions on the cap of the Pushbutton and pull.


Note: Do not use tools such as pliers to remove the Pushbutton as this may damage the cap.

## Panel Mounting

- Insert the Switch from the front of the panel. Mount the mounting nut from the terminal end of the Switch and tighten it.
- There are projections on the terminal end of the Switch which may, depending on the orientation, block the nut. In this case, turn the nut until it is possible to mount it. Tighten the nut to a torque between 0.20 and $0.39 \mathrm{~N} \cdot \mathrm{~m}$.
- If soldering is used, mount the mounting nut first. Lead wires and mounds of solder may make it impossible to mount the nut after soldering.



## Socket Mounting

- After securing the Switch to the panel using the mounting nut, insert the Socket into the Switch.
- Align the positioning holes of the Socket with the projections of the Switch before inserting the Socket.



## Mounting the Insulation Cover

- After securing the Switch to the panel using the mounting nut, pass the lead wires through the holes in the Insulation Cover and then perform wiring. Hold the Insulation Cover so that the cylindrical hole is facing the Switch, and insert the lead wires from the end with the barriers.
- After wiring is completed, mount the Insulation Cover by pushing it into the Switch.

Insulation Cover attached to Switch


## Mounting the Dust Cover

1. The Dust Cover separates into 2 parts: the cap and the mounting frame.
2. Insert the Switch into the mounting frame. (Align the lock projection with the recess on the mounting frame.)
3. Insert the Switch in the state described in step 2 into the panel.
(Align the lock protrusion on the mounting frame with the hole in the panel.)
4. Mount the mounting nut from the back of the panel and tighten it.
5. Insert the cap into the mounting frame. Ensure that the entire perimeter of the cap is properly inserted into the mounting frame by pressing down on the cap from different directions.


## Mounting the Switch Guard

1. Insert the Switch into the Switch Guard.
2. Insert the Switch into the panel in the state described in step 1.
3. Mount the mounting nut from the back of the panel and tighten it.


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[^0]:    Refer to Safety Precautions for All Pushbutton Switches/Indicators
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