# IDEC

*Think Automation and beyond...*

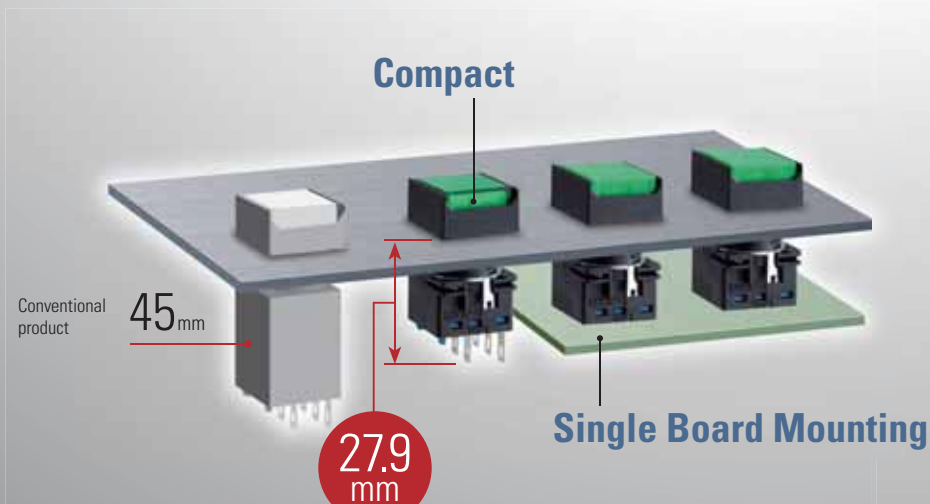**IDEC** *Flush Mount & 16mm LB Series*

*Switches and Pilot Lights*

# Design & Function

Flush mount switches provide a sleek and stylish appearance. 16mm miniature switches and pilot lights with a depth of only 27.9mm accommodate smaller machines and panels.

**Compact**

Conventional product **45**mm

**27.9** mm
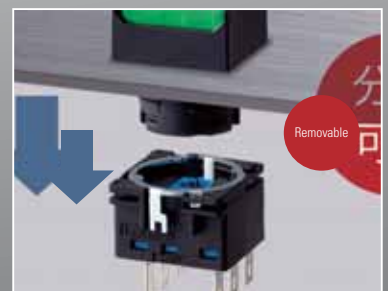
**Single Board Mounting**

## Compact

### Short body

The LB series is the shortest in the industry, only 27.9mm deep behind the panel. Reduces the size of machines and control panels.
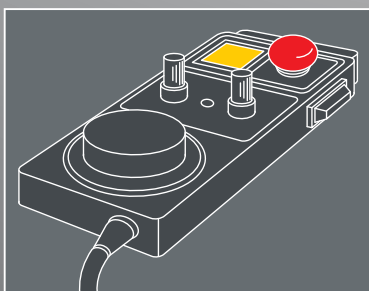
## Simple

### Single board Mounting & Removable contact blocks

Removable contacts enable easy wiring. Single board mounting reduces installation time and prevents incorrect wiring.

Removable

# Watertight

### Degree of protection: IP65

Perfect for environments where water is sprayed under pressure such as food and beverage processing.

# Flush Mount

### Stylish

Flush bezels project only 2 mm from the panel surface. The slim and stylish panel design enhances the appearance of any application.

2mm

# Flush Mount Switches & Pilot Lights

**Slim**

- Projects only 2 mm from the panel surface.
- Removable contact blocks ideal for single board mounting.
- Protection degree: IP65 (IEC 60529)

Actual Size
**2** mm

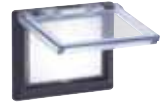Round          Square          Rectangular

## Illuminated Pushbuttons

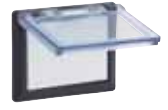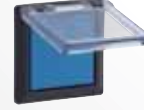**Switch Guard**
prevents inadvertent operation

## Pushbuttons

Lens with marking plate can also be used as a pushbutton.

**Switch Guard**
prevents inadvertent operation

## Pilot Lights

## Selector Switches

2-position and 3-position selector switches. Maintained and other spring return available.

## Key Selectors

**Wave key**
Seven different keys available.

Illuminated Pushbutton Color Options

A (amber)     G (green)     PW (white)     R (red)     S (blue)     Y (yellow)
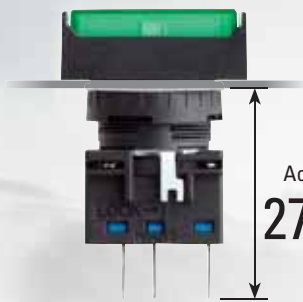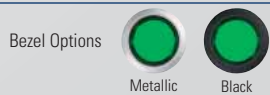
Pushbutton Color Options

B (black)     G (green)

**Short**

Actual Size
**27.9** mm

- Panel depth of only 27.9 mm.
- Removable contact blocks are ideal for single board mounting.
- Protection degree: IP65 (IEC 60529)

Round          Square          Rectangular

## Illuminated Pushbuttons

## Pushbuttons

Lens with marking plate can also be used as a pushbutton.

## Pilot Lights

## Selector Switches

2-position and 3-position selector switches. Maintained and spring return available.

## Key Selectors

Wave key
Seven different keys available.

R (red)    S (blue)    W (white)    Y (yellow)

Bezel Options        Metallic    Black

Flush bezel projects only 2mm from front of panel. Standard bezel has a panel depth of only 27.9mm! Removable contact blocks are ideal for single board mounting.

- Pushbuttons, selector switches, and key selector switches with up to 3PDT contacts.
- Key selectors with keys that are difficult to duplicate. Seven different key numbers to choose from.
- Black or metallic flush bezels available.
- Bright and clear LED illuminated face.
- Choice of either gold-clad or silver contacts.
- Degree of protection: IP65 (from the front of the panel)

| Applicable Standards | Mark | File No. or Organization |
|---|---|---|
| UL508 | **ՈԼ** | UL Recognition No.E55996 |
| CSA 22.2 No.14 | (SP) | CSA File No. LR 21451 |
| EN60947-5-1 | △ | TÜV Rheinland |
| | C€ | EU Low Voltage Directive |
| GB14048.5 | (CCC) | |

## Specifications

| | | |
|---|---|---|
| Operating Temperature | | −25 to +60°C (no freezing) Illuminated units: −25 to +55°C |
| Storage Temperature | | −30 to +80°C (no freezing) |
| Operating Humidity | | 45 to 85% RH (no condensation) |
| Contact Resistance | | 50 mW maximum (initial value) |
| Insulation Resistance | | 100 MW minimum (500V DC megger) |
| Dielectric Strength | Switch | Between live part and ground: 2,000V AC, 1 minute Between terminals of different poles: 2,000V AC, 1 minute Between terminals of the same poles: 1,000V AC, 1 minute |
| | Illumination | Between live part and ground: 2,000V AC, 1 minute |
| Vibration Resistance | | Operating extremes/Damage limits: 5 to 55 Hz, amplitude 0.5 mm |
| Shock Resistance | | Operating extremes: 100 m/s$^2$ Damage limits: 1,000 m/s$^2$ |
| Mechanical Life (minimum operations) | | Momentary: 2,000,000 Maintained: 250,000 Selector switches: 250,000 Key selector switches: 250,000 |
| Electrical Life (minimum operations) | | Momentary: 50,000 / 100,000 [Note 1] Maintained: 50,000 / 100,000 [Note 2] Selector switches: 50,000 / 100,000 [Note 2] Key selector switches: 50,000 / 100,000 [Note 2] |
| Degree of Protection | | IP65 (IEC 60529) |
| Terminal Style | | Solder/tab terminal #110 PC board terminal |
| Bezel | | Black plastic or metallic |
| Weight (approx.) | | 14g (illuminated pushbutton) 13g (pilot light) 13g (pushbutton) 15g (selector switch) 27g (key selector switch) 15g (illuminated pushbutton with guard) 14g (pushbutton with guard) |

1. Switching frequency 1,800 operations/h.
2. Switching frequency 1,200 operations/h.

## Contact Ratings

Gold Contact (switch base color: blue)

| | | |
|---|---|---|
| Rated Insulation Voltage | 250V | |
| Rated Thermal Current | 3A | |
| Rated Operating Voltage | 30V DC | 125V AC |
| Rated Operating Current (resistive load) | 0.1A | 0.1A |
| Contact Material | Gold-clad silver | |

Minimum applicable load (reference value): 5V AC/DC, 1 mA

Silver Contact (switch base color: gray)

| | | | 30V | 125V | 250V |
|---|---|---|---|---|---|
| Rated Insulation Voltage | | 250V | | | |
| Rated Operating Voltage | | | 30V | 125V | 250V |
| Rated Operating Current | AC 50/60Hz | Resistive load | — | 5A | 5A |
| | | Inductive load | — | 3A | 1.5A |
| | DC | Resistive load | 5A | 1.1A | — |
| | | Inductive load | 2.5A | 0.55A | — |
| | AC 50/60Hz | Resistive load | — | 5A | 3A |
| | | Inductive load | — | 3A | 1.5A |
| | DC | Resistive load | 3A | 0.6A | — |
| | | Inductive load | 1A | 0.22A | — |
| Rated Thermal Current | | 5A | | | |
| Contact Material | | Silver | | | |

AC inductive load: PF=0.6 to 0.7    DC inductive load: L/R=7 ms max.

## LED Ratings

| Rated Voltage | 5V DC | 12V AC/DC | 24V AC/DC |
|---|---|---|---|
| Voltage Range | 5V DC±5% | 12V AC/DC±10% | 24V AC/DC ±10% |
| LED Part No. | LB9Z-LED5② | LB9Z-LED1② | LB9Z-LED2② |
| Rated Current | A, R: 22 mA    G, PW, S: 16 mA | | |
| Voltage Rating | Marked on the side of the LED unit | | |
| LED Life (reference value) | Approx. 30,000 hours (until the brightness reduces to 50% of the initial value) | | |
| Internal Circuit | A, PW, R  G, S  | A, PW, R  G, S  | LED Chip Protection Diode Zener Diode Resistor Varistor |

1. For ② (color code): A (amber), G (green), PW (white), R (red), S (blue)
2. Use the white LED for yellow illumination.
3. LED lamp contains a current-limiting resistor.

# Illuminated Pushbuttons

## Illuminated Pushbuttons (Assembled) 🆄 🅢🅟 △ CE 🅒🅒🅒

| Shape | Operation | Operating Voltage | Contact | Standard Bezel | | Flush Bezel | | ② Color Code |
|---|---|---|---|---|---|---|---|---|
| | | | | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | |
| Standard Bezel (black) | Momentary | 5V DC | SPDT | LB①L-M1T51② | LB①L-M1T11V② | LB③④L-M1T51② | LB③④L-M1T11V② | |
| | | | DPDT | LB①L-M1T61② | LB①L-M1T21V② | LB③④L-M1T61② | LB③④L-M1T21V② | |
| | | 12V AC/DC | SPDT | LB①L-M1T53② | LB①L-M1T13V② | LB③④L-M1T53② | LB③④L-M1T13V② | |
| | | | DPDT | LB①L-M1T63② | LB①L-M1T23V② | LB③④L-M1T63② | LB③④L-M1T23V② | |
| | | 24V AC/DC | SPDT | LB①L-M1T54② | LB①L-M1T14V② | LB③④L-M1T54② | LB③④L-M1T14V② | Specify the color code in place of ② in the Part Number: A: amber G: green R: red S: blue PW: white Y: yellow |
| Flush Bezel (metallic or black) | | | DPDT | LB①L-M1T64② | LB①L-M1T24V② | LB③④L-M1T64② | LB③④L-M1T24V② | |
| | Maintained | 5V DC | SPDT | LB①L-A1T51② | LB①L-A1T11V② | LB③④L-A1T51② | LB③④L-A1T11V② | |
| | | | DPDT | LB①L-A1T61② | LB①L-A1T21V② | LB③④L-A1T61② | LB③④L-A1T21V② | |
| | | 12V AC/DC | SPDT | LB①L-A1T53② | LB①L-A1T13V② | LB③④L-A1T53② | LB③④L-A1T13V② | |
| | | | DPDT | LB①L-A1T63② | LB①L-A1T23V② | LB③④L-A1T63② | LB③④L-A1T23V② | |
| Black Bezel with Guard | | 24V AC/DC | SPDT | LB①L-A1T54② | LB①L-A1T14V② | LB③④L-A1T54② | LB③④L-A1T14V② | |
| | | | DPDT | LB①L-A1T64② | LB①L-A1T24V② | LB③④L-A1T64② | LB③④L-A1T24V② | |

1. For Standard Bezel part numbers specify:
   - Bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
   - Lens/LED color in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
2. For Flush Bezel part numbers specify:
   - Bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
   - Lens/LED in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
   - Bezel material in place of ④. M (metallic), Blank (black), G (black with guard)
3. Solder/Tab terminals have silver contacts and PC Board Terminals have gold contacts.
4. Illuminated pushbuttons contain an LED unit.
5. See page 20 for dimensions.
6. See page 33 for replacement LED units.
7. Illuminated pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See page 35 for details on the marking plate and film.

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## Illuminated Pushbuttons (Sub-assembled)

| Contact Block | Operator | LED Module | Lens | Completed Unit |
|---|---|---|---|---|

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### Contact Block

| Terminal Style | | Material | Contact | Part Number |
|---|---|---|---|---|
| | Solder/Tab | Silver | SPDT | LB-T50 |
| | | | DPDT | LB-T60 |
| | PCB | Gold | SPDT | LB-T10V |
| | | | DPDT | LB-T20V |

### LED Module

| | Color | Voltage | Part Number |
|---|---|---|---|
| | Amber | 5V | LB9Z-LED5A |
| | | 12V | LB9Z-LED1A |
| | | 24V | LB9Z-LED2A |
| | Green | 5V | LB9Z-LED5G |
| | | 12V | LB9Z-LED1G |
| | | 24V | LB9Z-LED2G |
| | Red | 5V | LB9Z-LED5R |
| | | 12V | LB9Z-LED1R |
| | | 24V | LB9Z-LED2R |
| | Blue | 5V | LB9Z-LED5S |
| | | 12V | LB9Z-LED1S |
| | | 24V | LB9Z-LED2S |
| | White | 5V | LB9Z-LED5PW |
| | | 12V | LB9Z-LED1PW |
| | | 24V | LB9Z-LED2PW |
| | Yellow | 5V | LB9Z-LED5Y |
| | | 12V | LB9Z-LED1Y |
| | | 24V | LB9Z-LED2Y |

### Operator

| Appearance | Mounting Style | Style | Momentary | Maintained |
|---|---|---|---|---|
| | Standard (Plastic) | Round | LB1L-M0 | LB1L-A0 |
| | | Square | LB2L-M0 | LB2L-A0 |
| | | Rectangular | LB3L-M0 | LB3L-A0 |
| | Flush Mount (Plastic) | Round | LB6L-M0 | LB6L-A0 |
| | | Square | LB7L-M0 | LB7L-A0 |
| | | Rectangular | LB8L-M0 | LB8L-A0 |
| | Flush Mount (Metallic) | Round | LB6ML-M0 | LB6ML-A0 |
| | | Square | LB7ML-M0 | LB7ML-A0 |
| | | Rectangular | LB8ML-M0 | LB8ML-A0 |
| | Flush Mount (Built-in switch guard) | Round | LB6GL-M0 | LB6GL-A0 |
| | | Square | LB7GL-M0 | LB7GL-A0 |
| | | Rectangular | LB8GL-M0 | LB8GL-A0 |

### Lens

| Style | Color | Part Number |
|---|---|---|
| Round | Amber | LB1A-L1A |
| | Green | LB1A-L1G |
| | Red | LB1A-L1R |
| | Blue | LB1A-L1S |
| | White | LB1A-L1W |
| | Yellow | LB1A-L1Y |
| Square | Amber | LB2A-L1A |
| | Green | LB2A-L1G |
| | Red | LB2A-L1R |
| | Blue | LB2A-L1S |
| | White | LB2A-L1W |
| | Yellow | LB2A-L1Y |
| Rectangular | Amber | LB3A-L1A |
| | Green | LB3A-L1G |
| | Red | LB3A-L1R |
| | Blue | LB3A-L1S |
| | White | LB3A-L1W |
| | Yellow | LB3A-L1Y |

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## Pilot Lights (Assembled) 🆄 ⑤ △ Ⓒ∈ ⑭

| Shape | Operating Voltage | Standard Bezel | | Flush Bezel | | ② Color Code |
|---|---|---|---|---|---|---|
| | | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | |
| **Standard Bezel (black)** | 5V DC | LB①P-1T01② | LB①P-1T01V② | LB③④P-1T01② | LB③④P-1T01V② | Specify the color code in place of ② in the Part Number.:<br><br>A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue<br>Y: yellow |
| **Flush Bezel (metallic or black)** | 12V AC/DC | LB①P-1T03② | LB①P-1T03V② | LB③④P-1T03② | LB③④P-1T03V② | |
| | 24V AC/DC | LB①P-1T04② | LB①P-1T04V② | LB③④P-1T04② | LB③④P-1T04V② | |

1. For Standard Bezel part numbers specify:
   - bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
   - lens/LED color in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
2. For Flush Bezel part numbers specify:
   - bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
   - lens/LED in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
   - bezel material in place of ④. M (metallic), Blank (black)
3. Pilot lights contain an LED unit.
4. See page 21 for dimensions.
5. See page 35 for replacement LED unit.

# Pilot Lights

## Pilot Lights (Sub-assembled)

| Contact Block | Operator | LED Module | Lens | Completed Unit |
|---|---|---|---|---|



### Contact Block

| Terminal Style | | Part Number |
|---|---|---|
| | Solder Tab | LB-T00 |
| | PCB | LB-T00V |

### LED Module

| | Color | Voltage | Part Number |
|---|---|---|---|
| | Amber | 5V | LB9Z-LED5A |
| | | 12V | LB9Z-LED1A |
| | | 24V | LB9Z-LED2A |
| | Green | 5V | LB9Z-LED5G |
| | | 12V | LB9Z-LED1G |
| | | 24V | LB9Z-LED2G |
| | Red | 5V | LB9Z-LED5R |
| | | 12V | LB9Z-LED1R |
| | | 24V | LB9Z-LED2R |
| | Blue | 5V | LB9Z-LED5S |
| | | 12V | LB9Z-LED1S |
| | | 24V | LB9Z-LED2S |
| | White | 5V | LB9Z-LED5PW |
| | | 12V | LB9Z-LED1PW |
| | | 24V | LB9Z-LED2PW |
| | Yellow | 5V | LB9Z-LED5Y |
| | | 12V | LB9Z-LED1Y |
| | | 24V | LB9Z-LED2Y |

### Operator

| Appearance | Mounting Style | Style | Part Number |
|---|---|---|---|
| | Standard (Plastic) | Round | LB1P-0 |
| | | Square | LB2P-0 |
| | | Rectangular | LB3P-0 |
| | Flush Mount (Plastic) | Round | LB6P-0 |
| | | Square | LB7P-0 |
| | | Rectangular | LB8P-0 |
| | Flush Mount (Metallic) | Round | LB6MP-0 |
| | | Square | LB7MP-0 |
| | | Rectangular | LB8MP-0 |

### Lens

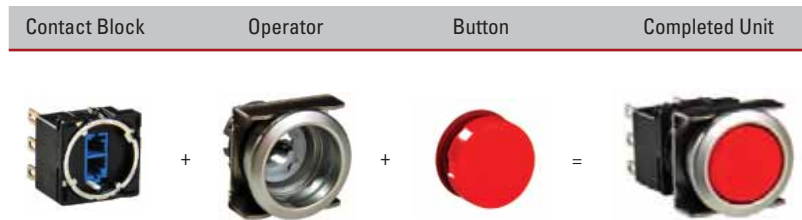| Shape | Color | Part Number |
|---|---|---|
| Round | Amber | LB1A-P1A |
| | Green | LB1A-P1G |
| | Red | LB1A-P1R |
| | Blue | LB1A-P1S |
| | White | LB1A-P1W |
| | Yellow | LB1A-P1Y |
| Square | Amber | LB2A-P1A |
| | Green | LB2A-P1G |
| | Red | LB2A-P1R |
| | Blue | LB2A-P1S |
| | White | LB2A-P1W |
| | Yellow | LB2A-P1Y |
| Rectangular | Amber | LB3A-P1A |
| | Green | LB3A-P1G |
| | Red | LB3A-P1R |
| | Blue | LB3A-P1S |
| | White | LB3A-P1W |
| | Yellow | LB3A-P1Y |

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## Non-Illuminated Pushbuttons (Assembled) 🆄🄻 ⑤⑫ △ C€ ⑬

| Shape | Operation | Contact Material | Contact | Standard Bezel | | Flush Bezel | | ② Color Code |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | |
| Standard Bezel (black)<br><br><br><br>Flush Bezel (metallic or black)<br><br><br><br>Black Bezel with Guard | Momentary | Gold | SPDT | LB①B-M1T5② | LB①B-M1T1V② | LB③④B-M1T5② | LB③④B-M1T1V② | |
| | | | DPDT | LB①B-M1T6② | LB①B-M1T2V② | LB③④B-M1T6② | LB③④B-M1T2V② | |
| | | | 3PDT | LB①B-M1T7② | LB①B-M1T3V② | LB③④B-M1T7② | LB③④B-M1T3V② | Specify the color code in place of ② in the Part Number:<br><br>B: black<br>G: green<br>R: red<br>S: blue<br>W: white<br>Y: yellow |
| | Maintained | Gold | SPDT | LB①B-A1T5② | LB①B-A1T1V② | LB③④B-A1T5② | LB③④B-A1T1② | |
| | | | DPDT | LB①B-A1T6② | LB①B-A1T2V② | LB③④B-A1T6② | LB③④B-A1T2② | |
| | | | 3PDT | LB①B-A1T7② | LB①B-A1T3V② | LB③④B-A1T7② | LB③④B-A1T3② | |

1. For Standard Bezel part numbers specify:
   - bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
   - lens/LED in place of ②. B (black), G (green), R (red), S (blue), W (white), Y (yellow)
2. For Flush Bezel part numbers specify:
   - bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
   - lens/LED in place of ②. B (black), G (green), R (red), S (blue), W (white), Y (yellow)
   - bezel material in place of ④. M (metallic), Blank (black)
3. See page 24 for dimensions.
4. Lens can be used with legend markings. Engraving can be done on a marking plate which is placed into the lens, or a clear film can be printed and placed under the lens. For details on the marking plate and film, see page 35.

## Non-Illuminated Pushbuttons (Sub-assembled)

| Contact Block | Operator | Button | Completed Unit |
|---|---|---|---|

### Contact Block

| Terminal Style | | Material | Contact | Part Number |
|---|---|---|---|---|
| | Solder/Tab | Silver | SPDT | LB-T5 |
| | | | DPDT | LB-T6 |
| | | | 3PDT | LB-T7 |
| | PCB | Gold | SPDT | LB-T1V |
| | | | DPDT | LB-T2V |
| | | | 3PDT | LB-T3V |

### Button

| Shape | | Color | Part Number |
|---|---|---|---|
| | Round | Black | LB1A-B1B |
| | | Green | LB1A-B1G |
| | | Red | LB1A-B1R |
| | | Blue | LB1A-B1S |
| | | White | LB1A-B1W |
| | | Yellow | LB1A-B1Y |
| | Square | Black | LB2A-B1B |
| | | Green | LB2A-B1G |
| | | Red | LB2A-B1R |
| | | Blue | LB2A-B1S |
| | | White | LB2A-B1W |
| | | Yellow | LB2A-B1Y |
| | Rectangular | Black | LB3A-B1B |
| | | Green | LB3A-B1G |
| | | Red | LB3A-B1R |
| | | Blue | LB3A-B1S |
| | | White | LB3A-B1W |
| | | Yellow | LB3A-B1Y |

### Operator

| | Mounting style | Style | Momentary | Maintained |
|---|---|---|---|---|
| | Standard (Plastic) | Round | LB1L-M0 | LB1L-A0 |
| | | Square | LB2L-M0 | LB2L-A0 |
| | | Rectangular | LB3L-M0 | LB3L-A0 |
| | Flush Mount (Plastic) | Round | LB6L-M0 | LB6L-A0 |
| | | Square | LB7L-M0 | LB7L-A0 |
| | | Rectangular | LB8L-M0 | LB8L-A0 |
| | Flush Mount (Metallic) | Round | LB6ML-M0 | LB6ML-A0 |
| | | Square | LB7ML-M0 | LB7ML-A0 |
| | | Rectangular | LB8ML-M0 | LB8ML-A0 |
| | Flush Mount (Built-in switch guard) | Round | LB6GL-M0 | LB6GL-A0 |
| | | Square | LB7GL-M0 | LB7GL-A0 |
| | | Rectangular | LB8GL-M0 | LB8GL-A0 |

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## Selector Switches (Assembled) 🆄 🆂 △ C E ⲥⲥⲥ

| Shape | Operator Position | | Contact | Standard Bezel | | Flush Bezel | |
|---|---|---|---|---|---|---|---|
| | | | | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |
| Standard Bezel (black) | 90° 2-position | Maintained ⟨L R⟩ | SPDT | LB①S-2T5 | LB①S-2T1V | LB③④S-2T5 | LB③④S-2T1V |
| | | | DPDT | LB①S-2T6 | LB①S-2T2V | LB③④S-2T6 | LB③④S-2T2V |
| | | | 3PDT | LB①S-2T7 | LB①S-2T3V | LB③④S-2T7 | LB③④S-2T3V |
| | | Spring return from right ⟨L R⟩ | SPDT | LB①S-21T5 | LB①S-21T1V | LB③④S-21T5 | LB③④S-21T1V |
| | | | DPDT | LB①S-21T6 | LB①S-21T2V | LB③④S-21T6 | LB③④S-21T2V |
| | | | 3PDT | LB①S-21T7 | LB①S-21T3V | LB③④S-21T7 | LB③④S-21T3V |
| Flush Bezel (metallic or black) | 45° 3-position | Maintained ⟨L C R⟩ | DPDT | LB①S-3T6 | LB①S-3T2V | LB③④S-3T6 | LB③④S-3T2V |
| | | | 3PDT | LB①S-3T7 | LB①S-3T3V | LB③④S-3T7 | LB③④S-3T3V |
| | | Spring return from right ⟨L C R⟩ | DPDT | LB①S-31T6 | LB①S-31T2V | LB③④S-31T6 | LB③④S-31T2V |
| | | | 3PDT | LB①S-31T7 | LB①S-31T3V | LB③④S-31T7 | LB③④S-31T3V |
| | | Spring return from left ⟨L C R⟩ | DPDT | LB①S-32T6 | LB①S-32T2V | LB③④S-32T6 | LB③④S-32T2V |
| | | | 3PDT | LB①S-32T7 | LB①S-32T3V | LB③④S-32T7 | LB③④S-32T3V |
| | | Spring return two-way ⟨L C R⟩ | DPDT | LB①S-33T6 | LB①S-33T2V | LB③④S-33T6 | LB③④S-33T2V |
| | | | 3PDT | LB①S-33T7 | LB①S-33T3V | LB③④S-33T7 | LB③④S-33T3V |

1. For Standard Bezel part numbers specify bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
2. For Flush Bezel part numbers specify:
   -bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
   - bezel material in place of ④. M (metallic), Blank (black)
3. For Contact Operation, see page 18.
4. For dimensions, see page 25.

## Selector Switches (Sub-assembled)

| Contact Block | Operator | Completed Unit |
|---|---|---|

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### Contact Block

| Terminal Style | | Material | Contact | Part Number |
|---|---|---|---|---|
| | Solder/Tab | Silver | SPDT | LB-T5 |
| | | | DPDT | LB-T6 |
| | | | 3PDT | LB-T7 |
| | PCB | Gold | SPDT | LB-T1V |
| | | | DPDT | LB-T2V |
| | | | 3PDT | LB-T3V |

SPDT contacts applicable for 2-position switches only.

### Operator

| Bezel Style | Shape | Position | Function | Part Number |
|---|---|---|---|---|
| Standard (Plastic) | Round | 2 | Maintained | LB1S-2Y |
| | | | Spring from right | LB1S-21Y |
| | | 3 | Maintained | LB1S-3Y |
| | | | Spring from right | LB1S-31Y |
| | | | Spring from left | LB1S-32Y |
| | | | Spring from both | LB1S-33Y |
| | Square | 2 | Maintained | LB2S-2Y |
| | | | Spring from right | LB2S-21Y |
| | | 3 | Maintained | LB2S-3Y |
| | | | Spring from right | LB2S-31Y |
| | | | Spring from left | LB2S-32Y |
| | | | Spring from both | LB2S-33Y |
| | Rectangular | 2 | Maintained | LB3S-2Y |
| | | | Spring from right | LB3S-21Y |
| | | 3 | Maintained | LB3S-3Y |
| | | | Spring from right | LB3S-31Y |
| | | | Spring from left | LB3S-32Y |
| | | | Spring from both | LB3S-33Y |

| Bezel Style | Shape | Position | Function | Part Number |
|---|---|---|---|---|
| Flush Mount (Plastic) | Round | 2 | Maintained | LB6S-2Y |
| | | | Spring from right | LB6S-21Y |
| | | 3 | Maintained | LB6S-3Y |
| | | | Spring from right | LB6S-31Y |
| | | | Spring from left | LB6S-32Y |
| | | | Spring from both | LB6S-33Y |
| | Square | 2 | Maintained | LB7S-2Y |
| | | | Spring from right | LB7S-21Y |
| | | 3 | Maintained | LB7S-3Y |
| | | | Spring from right | LB7S-31Y |
| | | | Spring from left | LB7S-32Y |
| | | | Spring from both | LB7S-33Y |
| | Rectangular | 2 | Maintained | LB8S-2Y |
| | | | Spring from right | LB8S-21Y |
| | | 3 | Maintained | LB8S-3Y |
| | | | Spring from right | LB8S-31Y |
| | | | Spring from left | LB8S-32Y |
| | | | Spring from both | LB8S-33Y |
| Flush Mount (Metallic) | Round | 2 | Maintained | LB6MS-2Y |
| | | | Spring from right | LB6MS-21Y |
| | | 3 | Maintained | LB6MS-3Y |
| | | | Spring from right | LB6MS-31Y |
| | | | Spring from left | LB6MS-32Y |
| | | | Spring from both | LB6MS-33Y |
| | Square | 2 | Maintained | LB7MS-2Y |
| | | | Spring from right | LB7MS-21Y |
| | | 3 | Maintained | LB7MS-3Y |
| | | | Spring from right | LB7MS-31Y |
| | | | Spring from left | LB7MS-32Y |
| | | | Spring from both | LB7MS-33Y |
| | Rectangular | 2 | Maintained | LB8MS-2Y |
| | | | Spring from right | LB8MS-21Y |
| | | 3 | Maintained | LB8MS-3Y |
| | | | Spring from right | LB8MS-31Y |
| | | | Spring from left | LB8MS-32Y |
| | | | Spring from both | LB8MS-33Y |

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## Key Selector Switches (Assembled) 🄄 ⑤ △ C€ Ⓒ

| Shape | Operator Position | Key retained at ● | Contact | Standard Bezel Solder/Tab Terminal (silver contacts) | Standard Bezel PC Board Terminal (gold contacts) | Flush Bezel Solder/Tab Terminal (silver contacts) | Flush Bezel PC Board Terminal (gold contacts) |
|---|---|---|---|---|---|---|---|
| Standard Bezel (black) | 90° 2-position — Maintained | A | SPDT | LB①K-2T5A | LB①K-2T1VA | LB③④K-2T5A | LB③④K-2T1VA |
| | | A | DPDT | LB①K-2T6A | LB①K-2T2VA | LB③④K-2T6A | LB③④K-2T2VA |
| | | A | 3PDT | LB①K-2T7A | LB①K-2T3VA | LB③④K-2T7A | LB③④K-2T3VA |
| | | B | SPDT | LB①K-2T5B | LB①K-2T1VB | LB③④K-2T5B | LB③④K-2T1VB |
| | | B | DPDT | LB①K-2T6B | LB①K-2T2VB | LB③④K-2T6B | LB③④K-2T2VB |
| | | B | 3PDT | LB①K-2T7B | LB①K-2T3VB | LB③④K-2T7B | LB③④K-2T3VB |
| | | C | SPDT | LB①K-2T5C | LB①K-2T1VC | LB③④K-2T5C | LB③④K-2T1VC |
| | | C | DPDT | LB①K-2T6C | LB①K-2T2VC | LB③④K-2T6C | LB③④K-2T2VC |
| | | C | 3PDT | LB①K-2T7C | LB①K-2T3VC | LB③④K-2T7C | LB③④K-2T3VC |
| | Spring return from right | B | SPDT | LB①K-21T5B | LB①K-21T1VB | LB③④K-21T5B | LB③④K-21T1VB |
| | | B | DPDT | LB①K-21T6B | LB①K-21T2VB | LB③④K-21T6B | LB③④K-21T2VB |
| | | B | 3PDT | LB①K-21T7B | LB①K-21T3VB | LB③④K-21T7B | LB③④K-21T3VB |
| Flush Bezel (metallic or black) | 45° 3-position — Maintained | A | DPDT | LB①K-3T6A | LB①K-3T2VA | LB③④K-3T6A | LB③④K-3T2VA |
| | | A | 3PDT | LB①K-3T7A | LB①K-3T3VA | LB③④K-3T7A | LB③④K-3T3VA |
| | | B | DPDT | LB①K-3T6B | LB①K-3T2VB | LB③④K-3T6B | LB③④K-3T2VB |
| | | B | 3PDT | LB①K-3T7B | LB①K-3T3VB | LB③④K-3T7B | LB③④K-3T3VB |
| | | C | DPDT | LB①K-3T6C | LB①K-3T2VC | LB③④K-3T6C | LB③④K-3T2VC |
| | | C | 3PDT | LB①K-3T7C | LB①K-3T3VC | LB③④K-3T7C | LB③④K-3T3VC |
| | | D | DPDT | LB①K-3T6D | LB①K-3T2VD | LB③④K-3T6D | LB③④K-3T2VD |
| | | D | 3PDT | LB①K-3T7D | LB①K-3T3VD | LB③④K-3T7D | LB③④K-3T3VD |
| | | E | DPDT | LB①K-3T6E | LB①K-3T2VE | LB③④K-3T6E | LB③④K-3T2VE |
| | | E | 3PDT | LB①K-3T7E | LB①K-3T3VE | LB③④K-3T7E | LB③④K-3T3VE |
| | | G | DPDT | LB①K-3T6G | LB①K-3T2VG | LB③④K-3T6G | LB③④K-3T2VG |
| | | G | 3PDT | LB①K-3T7G | LB①K-3T3VG | LB③④K-3T7G | LB③④K-3T3VG |
| | | H | DPDT | LB①K-3T6H | LB①K-3T2VH | LB③④K-3T6H | LB③④K-3T2VH |
| | | H | 3PDT | LB①K-3T7H | LB①K-3T3VH | LB③④K-3T7H | LB③④K-3T3VH |

## Key Selector Switches con't

| Shape | Operator Position | Key retained at ● | | Contact | Standard Bezel | | Flush Bezel | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |
| Standard Bezel (black | 45° 3-position | Spring return from right | B ⓛ Ⓒ Ⓡ | DPDT | LB①K-31T6B | LB①K-31T2VB | LB③④K-31T6B | LB③④K-31T2VB |
| | | | | 3PDT | LB①K-31T7B | LB①K-31T3VB | LB③④K-31T7B | LB③④K-31T3VB |
| | | | D Ⓛ Ⓒ Ⓡ | DPDT | LB①K-31T6D | LB①K-31T2VD | LB③④K-31T6D | LB③④K-31T2VD |
| | | | | 3PDT | LB①K-31T7D | LB①K-31T3VD | LB③④K-31T7D | LB③④K-31T3VD |
| | | | G ⓛ Ⓒ Ⓡ | DPDT | LB①K-31T6G | LB①K-31T2VG | LB③④K-31T6G | LB③④K-31T2VG |
| | | | | 3PDT | LB①K-31T7G | LB①K-31T3VG | LB③④K-31T7G | LB③④K-31T3VG |
| | | Spring return from left | C Ⓛ Ⓒ ⓡ | DPDT | LB①K-32T6C | LB①K-32T2VC | LB③④K-32T6C | LB③④K-32T2VC |
| | | | | 3PDT | LB①K-32T7C | LB①K-32T3VC | LB③④K-32T7C | LB③④K-32T3VC |
| Flush Bezel (metallic or black) | | | D Ⓛ Ⓒ Ⓡ | DPDT | LB①K-32T6D | LB①K-32T2VD | LB③④K-32T6D | LB③④K-32T2VD |
| | | | | 3PDT | LB①K-32T7D | LB①K-32T3VD | LB③④K-32T7D | LB③④K-32T3VD |
| | | | H Ⓛ Ⓒ ⓡ | DPDT | LB①K-32T6H | LB①K-32T2VH | LB③④K-32T6H | LB③④K-32T2VH |
| | | | | 3PDT | LB①K-32T7H | LB①K-32T3VH | LB③④K-32T7H | LB③④K-32T3VH |
| | | Spring return two-way | D Ⓛ Ⓒ Ⓡ | DPDT | LB①K-33T6D | LB①K-33T2VD | LB③④K-33T6D | LB③④K-33T2VD |
| | | | | 3PDT | LB①K-33T7D | LB①K-33T3VD | LB③④K-33T7D | LB③④K-33T3VD |

1. Key is retained at ● and removable at ○ positions.
2. Two keys are supplied.
3. For Standard Bezel part numbers specify bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
4. For Flush Bezel part numbers specify:
   -bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
   - bezel material in place of ④. M (metallic), Blank (black)
5. For Contact Operation, see page 18.
6. For dimensions, see page 27.
7. Wave keys also available.
   Add the letter "S" before the "T" in the part no. Example: LB1K-31ST1A
   Besides the standard key (key number 0H), six other keys are available.
   To order other keys, specify the key number as shown below:
8. Example: LB1K-31ST2B-1H  (Key number is indicated on the key cylinder. Standard keys do not have a key number indication.)

(blank): Standard key (0H)
1H to 2H: Reversible key
3H to 6H: Non-reversible key

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## Key Selector Switches (Sub-assembled)

| Contact Block | Operator | Completed Unit |
|---|---|---|

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### Contact Block

| Terminal Style | | Material | Contact | Part Number |
|---|---|---|---|---|
|  | Solder/Tab | Silver | SPDT | LB-T5 |
| | | | DPDT | LB-T6 |
| | | | 3PDT | LB-T7 |
|  | PCB | Gold | SPDT | LB-T1V |
| | | | DPDT | LB-T2V |
| | | | 3PDT | LB-T3V |

### Opterator

| Bezel style | Style | Position | Function | Part number |
|---|---|---|---|---|
| Standard (plastic)  | Round | 2 | Maintained | LB1K-2⑤ |
| | | | Spring from right | LB1K-21B |
| | | 3 | Maintained | LB1K-3⑤ |
| | | | Spring from right | LB1K-31⑤ |
| | | | Spring from left | LB1K-32⑤ |
| | | | Spring from both | LB1K-33D |
| | Square | 2 | Maintained | LB2K-2⑤ |
| | | | Spring from right | LB2K-21B |
| | | 3 | Maintained | LB2K-3⑤ |
| | | | Spring from right | LB2K-31⑤ |
| | | | Spring from left | LB2K-32⑤ |
| | | | Spring from both | LB2K-33D |
| | Rectangular | 2 | Maintained | LB3K-2⑤ |
| | | | Spring from right | LB3K-21B |
| | | 3 | Maintained | LB3K-3⑤ |
| | | | Spring from right | LB3K-31⑤ |
| | | | Spring from left | LB3K-32⑤ |
| | | | Spring from both | LB3K-33D |

| Bezel style | Style | Position | Function | Part number |
|---|---|---|---|---|
| Flush Mount (plastic)  | Round | 2 | Maintained | LB6K-2⑤ |
| | | | Spring from right | LB6K-21B |
| | | 3 | Maintained | LB6K-3⑤ |
| | | | Spring from right | LB6K-31⑤ |
| | | | Spring from left | LB6K-32⑤ |
| | | | Spring from both | LB6K-33D |
| | Square | 2 | Maintained | LB7K-2⑤ |
| | | | Spring from right | LB7K-21B |
| | | 3 | Maintained | LB7K-3⑤ |
| | | | Spring from right | LB7K-31⑤ |
| | | | Spring from left | LB7K-32⑤ |
| | | | Spring from both | LB7K-33D |
| | Rectangular | 2 | Maintained | LB8K-2⑤ |
| | | | Spring from right | LB8K-21B |
| | | 3 | Maintained | LB8K-3⑤ |
| | | | Spring from right | LB8K-31⑤ |
| | | | Spring from left | LB8K-32⑤ |
| | | | Spring from both | LB8K-33D |
| Flush Mount (metallic)  | Round | 2 | Maintained | LB6MK-2⑤ |
| | | | Spring from right | LB6MK-21B |
| | | 3 | Maintained | LB6MK-3⑤ |
| | | | Spring from right | LB6MK-31⑤ |
| | | | Spring from left | LB6MK-32⑤ |
| | | | Spring from both | LB6MK-33D |
| | Square | 2 | Maintained | LB7MK-2⑤ |
| | | | Spring from right | LB7MK-21B |
| | | 3 | Maintained | LB7MK-3⑤ |
| | | | Spring from right | LB7MK-31⑤ |
| | | | Spring from left | LB7MK-32⑤ |
| | | | Spring from both | LB7MK-33D |
| | Rectangular | 2 | Maintained | LB8MK-2⑤ |
| | | | Spring from right | LB8MK-21B |
| | | 3 | Maintained | LB8MK-3⑤ |
| | | | Spring from right | LB8MK-31⑤ |
| | | | Spring from left | LB8MK-32⑤ |
| | | | Spring from both | LB8MK-33D |

In place of ⑤ specify retention option code from table below.

### ⑤ Retention Option Code

| Code | Description | | Code | Description |
|---|---|---|---|---|
| A | Key not retained in any position (Removable in all positions) | | E | Key retained in center only (3 position only) |
| B | Key retained in right position only | | G | Key retained in right and center (3 position only) |
| C | Key retained in left position only | | H | Key retained in left and center (3 position only) |
| D | Key retained in left and right (3 position only) | | | |

For wave key operators, add "S" to part number. For example LW6K-2SB.

## Contact Operation

| Operator Position & Contact Operation (Top View) | | | | | |
|---|---|---|---|---|---|
| Position | | | Contact | ↘ Left | ↑ Center | ↗ Right |

| | | | | | | |
|---|---|---|---|---|---|---|
| **90° 2-position** | L R — Maintained | L R — Spring return from right | SPDT | NO1 NC1 / C1 | | NO1 NC1 / C1 |
| | | | DPDT | Left NO1 NC1 / Right NO2 NC2 / C1 C2 | | Left NO1 NC1 / Right NO2 NC2 / C1 C2 |
| | | | 3PDT | Left NO1 NC1 / Center NO2 NC2 / Right NO3 NC3 / C1 C2 C3 | | Left NO1 NC1 / Center NO2 NC2 / Right NO3 NC3 / C1 C2 C3 |
| **45° 3-position** | L C R — Maintained; L C R — Spring return from right; L C R — Spring return from left; L C R — Spring return two-way | | DPDT | Left NO1 NC1 / Right NO2 NC2 / C1 C2 | Left NO1 NC1 / Right NO2 NC2 / C1 C2 | Left NO1 NC1 / Right NO2 NC2 / C1 C2 |
| | | | 3PDT | Left NO1 NC1 / Center NO2 NC2 / Right NO3 NC3 / C1 C2 C3 | Left NO1 NC1 / Center NO2 NC2 / Right NO3 NC3 / C1 C2 C3 | Left NO1 NC1 / Center NO2 NC2 / Right NO3 NC3 / C1 C2 C3 |

## Mounting Hole Layout (mm)

| Standard Bezels | Flush Bezels | | |
|---|---|---|---|
| | Round | Square | Rectangular |
| Ø16.2 +0.2/0 ; 18 *2 ; 18 *1 | Ø18.2 +0.2/0 ; 22 *2 ; 22 *1 | □18.2 +0.2/0 ; 22 *2 ; 22 *1 | 18.2 +0.2/0 ; 24.2 +0.2/0 ; 22 *2 ; 28 |

*1  Rectangular: 24 mm
    3PDT: 23.2 mm
*2  3PDT: 21 mm

*1  3PDT: 23.2 mm
*2  Switches with Guard: 45 mm

When using the LB series with a rubber boot or terminal cover, make sure to note the dimensions on page 31 and page 32.

## PC Board Drilling Layout (mm)

### Notes for Designing PC Board and Circuit

1. Use 1.6-mm-thick glass epoxy PC board with drilled holes.
2. Design a circuit so that the LB series can operate within the rated voltage and current range. Make sure that inrush current and voltage do not exceed the rating.
3. Minimum applicable load is 5V AC/DC, 1mA on gold contacts.
4. Since the *2.8-mm-wide terminal touches the PC board as shown below , short circuit may occur with pattern lines. Design a circuit that prevents short circuits.

### SPDT/DPDT Contacts
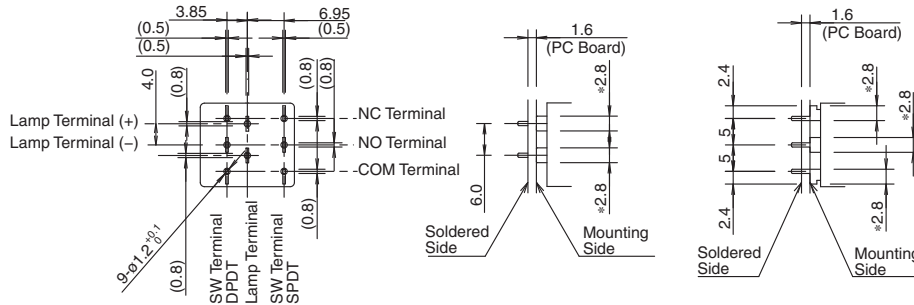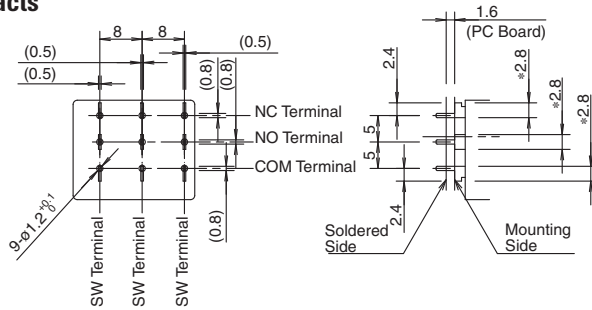


### 3PDT Contacts



### PC Board Drilling Layout (Bottom View)

SPDT/DPDT Contacts
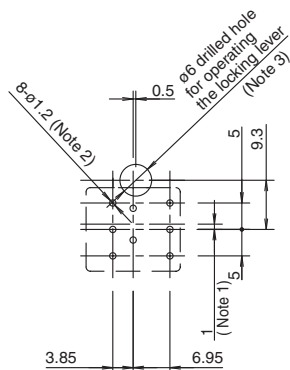
3PDT Contacts
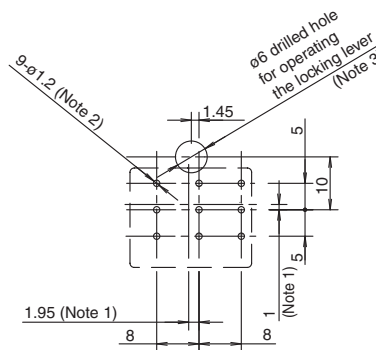


1. When designing, note the alignment of the center lines of the contact blocks and operators.
2. The diameter of the terminal hole is ø1.2.
3. Hole diameter may vary to meet installation requirements. Determine the location and the size of the hole so that the locking lever can be operated.

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# Dimensions (mm)

## Illuminated Pushbutton

### Standard Bezels



Panel Thickness: 0.5 to 3.2 mm

Gasket
Locking Ring
Mounting Plate

3.85
6.95
5.7
0.6

**Round**
Ø18

**Square**
□18

**Rectangular**
24
18

LOCK
17.8
15.8
17.8
3
3

0.8W × 0.5t
5.5
1
2
5.5

2.8W × 0.5t
6
6
1
8.8
7
20.9
9
*

**PC Board Terminal**
**Solder/Tab Terminal**

1
2.6
1.2
2-R0.6

∗**Solder/Tab Terminal**

### Flush Bezels
SPDT/DPDT Contacts



Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

3.85
6.95
3.85
6.95

**Round**
Ø22

**Square**
□22

**Rectangular**
28
22

LOCK
17.8
15.8
17.8
3
3

0.8W × 0.5t
5.5
1
2
5.5

2.8W × 0.5t
6
6
1
7
27.9
2
*

**PC Board Terminal**
**Solder/Tab Terminal**

1
2.6
1.2
2-R0.6

∗ **Solder/Tab Terminal**

### Switch with Guard



Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

3.85
6.95
3.85
6.95

**Round**
Ø22
11
22.5

**Square**
22
11
22.5

24.2

**Rectangular**
28
11
22.5
30.4

LOCK
17.8
15.8
17.8
3
3

0.8W × 0.5t
5.5
1

2.8W × 0.5t
6
6
1
7
27.9
5.2
2
2
5.5
*

1
2.6
1.2
2-R0.6

∗ **Solder/Tab Terminal**

## Pilot Lights

### Standard Bezels

Gasket

Locking Ring

Panel Thickness: 0.5 to 3.2 mm

5.7

Mounting Plate

0.6

**Round**

ø18

**Square**

□18

**Rectangular**

18

24

LOCK

17.8
15.8
17.8

0.8W × 0.5t

3
3

2
5.5

**PC Board Terminal**

2.8W × 0.5t

3
3

*

7  20.9  9

8.8

**Solder/Tab Terminal**

1  2.6

1.2

2-R0.6

∗**Solder/Tab Terminal**

### Flush Bezels

Panel Thickness: 0.5 to 3.2 mm

Gasket

Locking Ring

3.85

6.95

Mounting Bracket

**Round**

ø22

**Square**

□22

**Rectangular**

22

28

LOCK

17.8
15.8
17.8

0.8W × 0.5t

3
3

2
5.5

**PC Board Terminal**

2.8W × 0.5t

6
6
1

6

*

7  27.9  2

**Solder/Tab Terminal**

1  2.6

1.2

2-R0.6

∗ **Solder/Tab Terminal**

## Terminal Arrangement (Bottom View)

### Illuminated Pushbuttons
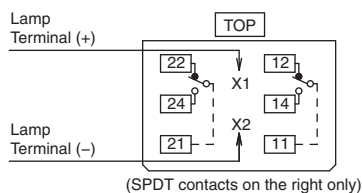
Lamp Terminal (+)

TOP

22    12
X1
24    14
X2
21    11

Lamp Terminal (–)

(SPDT contacts on the right only)

### Pilot Lights

Lamp Terminal (+)

TOP

X1

Lamp Terminal (–)

X2
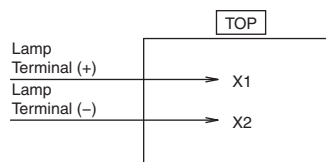
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## Non-Illuminated Pushbuttons

### Standard Bezels
SPDT/DPDT Contacts

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
5.7
Mounting Plate
0.6
3.85
6.95

**Round**
⌀18

**Square**
□18

**Rectangular**
18
24

LOCK
17.8
15.8
17.8

0.8W × 0.5t
5
5
1
2
5.5

**PC Board Terminal**

2.8W × 0.5t
6
6
1
*
7  20.9  9
8.8

**Solder/Tab Terminal**

1  2.6
1.2
2-R0.6

∗ **Solder/Tab Terminal**

---

3PDT Contacts

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
5.7
Mounting Plate
0.6
1.95
8  8

**Round**
⌀18

**Square**
□18

**Rectangular**
18
24

LOCK
20.8
18.8
11.9
C1 NO1 NC1  C3 NO3 NC3
11.1
23

0.8W × 0.5t
5
5
1
2
5.5

**PC Board Terminal**

2.8W × 0.5t
6
6
1
*
7  20.9  9
8.8

**Solder/Tab Terminal**

1  2.6
1.2
2-R0.6

∗ **Solder/Tab Terminal**

## Non-Illuminated Pushbuttons

**Flush Bezels**
SPDT/DPDT Contacts

Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
3.85
3.85
6.95
6.95
Mounting Bracket

LOCK
0.8W × 0.5t
2.8W × 0.5t
17.8
15.8
17.8
1
5
5
1
6
6
2
5.5
∗
7
27.9
2

**PC Board Terminal**    **Solder/Tab Terminal**

**Round**
ø22

**Square**
□22

**Rectangular**
22
28

1    2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

---

3PDT Contacts

Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
1.95
1.95
8
8
8
8
Mounting Bracket

LOCK
0.8W × 0.5t
2.8W × 0.5t
20.8
18.8
11.9
11.1
23
1
5
5
1
6
6
2
5.5
∗
7
27.9
2

**PC Board Terminal**    **Solder/Tab Terminal**

**Round**
ø22

**Square**
□22

**Rectangular**
22
28

1    2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

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## Non-Illuminated Pushbuttons

### Switch with Guard
SPDT/DPDT Contacts

Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

3.85
6.95
3.85
6.95

**Round**
Ø22
22.5
11

**Square**
22.5
11
22

**Rectangular**
22.5
11
28
30.4

LOCK
17.8
15.8
17.8

0.8W × 0.5t
2.8W × 0.5t
24.2
1
5
5
1
6
6
2
5.5
7
27.9
5.2
2

**PC Board Terminal**   **Solder/Tab Terminal**

1   2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

---

3PDT Contacts

Panel Thickness: 0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

1.95
8
8
1.95
8
8

**Round**
Ø22
22.5
11

**Square**
22.5
11
22

**Rectangular**
22.5
11
28
30.4

LOCK
20.8
18.8
11.9
11.1
23

0.8W × 0.5t
2.8W × 0.5t
24.2
1
5
5
1
6
6
2
5.5
7
27.9
5.2
2

**PC Board Terminal**   **Solder/Tab Terminal**

1   2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

## Terminal Arrangement (Bottom View)

### SPDT/DPDT Contacts

TOP

| 22 | | 12 |
| 24 | | 14 |
| 21 | | 11 |

(SPDT contacts on the right only)

### 3PDT Contacts

TOP

| 32 | 22 | 12 |
| 34 | 24 | 14 |
| 31 | 21 | 11 |

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## Selector Switches

### Standard Bezels
SPDT/DPDT Contacts

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
Mounting Plate
0.6

3.85 6.95

LOCK
17.8 15.8
17.8

0.8W × 0.5t
2.8W × 0.5t

**PC Board Terminal**    **Knob Operator Solder/Tab Terminal**

8.8 8.7
7 20.9 15.5

2.8W × 0.5t

**Lever Operator Solder/Tab Terminal**

8.8 8.7
7 20.9 18.1

**Round** ⌀18   **Round** ⌀18
**Square** □18   **Square** □18
**Rectangular** 18   **Rectangular** 18
24 10.9   24

**Knob Operator**   **Lever Operator**

1 2.6
1.2 2-R0.6
∗ **Solder/Tab Terminal**

---

### 3PDT Contacts

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
Mounting Plate
0.6

1.95 8 8

LOCK
20.8 18.8 11.9
11.1
23

0.8W × 0.5t
2.8W × 0.5t

**PC Board Terminal**    **Knob Operator Solder/Tab Terminal**

8.8 8.7
7 20.9 15.5

0.8W × 0.5t

**Lever Operator Solder/Tab Terminal**

8.8 8.7
7 20.9 18.1

**Round** ⌀18   **Round** ⌀18
**Square** □18   **Square** □18
**Rectangular** 18   **Rectangular** 18
24   24

**Knob Operator**   **Lever Operator**

1 2.6
1.2 2-R0.6
∗ **Solder/Tab Terminal**

25

## Selector Switches

### Flush Bezels
SPDT/DPDT Contacts

Panel Thickness:
0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

3.85
6.95

Round ø22
Round ø22
Square □22
Square □22
Rectangular
Rectangular

LOCK
0.8W × 0.5t
2.8W × 0.5t

17.8
15.8
17.8
1
5.5
6
6
2
5.5
2
7  27.9  8.5

**PC Board Terminal**  **Knob Operator Solder/Tab Terminal**

22
28
22
28

**Knob Operator**  **Lever Operator**

2.8W × 0.5t
1
6
6
2
7  27.9  11.1

**Lever Operator Solder/Tab Terminal**

1  2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

---

### 3PDT Contacts

Panel Thickness:
0.5 to 3.2 mm
Gasket
Locking Ring
Mounting Bracket

1.95
8
8

Round ø22
Round ø22
Square □22
Square □22
Rectangular
Rectangular

LOCK
0.8W × 0.5t
2.8W × 0.5t

20.8
18.8
11.9
11.1
23
1
5.5
6
6
2
5.5
2
7  27.9  8.5

**PC Board Terminal**  **Knob Operator Solder/Tab Terminal**

22
28
22
28

**Knob Operator**  **Lever Operator**

1
6
6
1.2
2
7  27.9  11.1

**Lever Operator Solder/Tab Terminal**

1  2.6
1.2
2-R0.6
∗ **Solder/Tab Terminal**

## Terminal Arrangement (Bottom View)

### SPDT/DPDT Contacts

TOP

| 22 | | 12 |
| 24 | | 14 |
| 21 | | 11 |

(SPDT contacts on the right only)

### 3PDT Contacts

TOP

| 32 | 22 | 12 |
| 34 | 24 | 14 |
| 31 | 21 | 11 |

## Key Selector Switches

**Standard Bezels**
SPDT/DPDT Contacts

∗ **Solder/Tab Terminal**

1 2.6
1.2
2-R0.6

3.85
6.95

3.85
6.95

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
Mounting Bracket
0.6

ø18

□18

18

24

LOCK
17.8
15.8
17.8

2.8W × 0.5t
1
5
5
2
5.5

**PC Board Terminal**

2.8W × 0.5t
1
6
6
1.2
∗
7 20.9 25.1
8.8 9

**Solder/Tab Terminal**

3PDT Contacts

∗ **Solder/Tab Terminal**

1 2.6
1.2
2-R0.6

1.95
8
8

1.95
8
8

Gasket
Locking Ring
Panel Thickness: 0.5 to 3.2 mm
Mounting Bracket
0.6

ø18

□18

18

24

LOCK
20.8
18.8
11.9
11.1
23

2.8W × 0.5t
1
5
5
2
5.5

**PC Board Terminal**

2.8W × 0.5t
1
6
6
1.2
∗
7 20.9 25.1
8.8 9

**Solder/Tab Terminal**

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# Dimensions (mm)

## Key Selector Switches

**Flush Bezels**
SPDT/DPDT Contacts

Gasket
Panel Thickness: 0.5 to 3.2 mm
Locking Ring
Mounting Bracket

3.85
6.95

**Round** ⌀22

**Square** □22

**Rectangular** 22 / 28

LOCK
Panel Thickness: 0.5 to 3.2 mm
2.8W × 0.5t

17.8
15.8
17.8

1
5
5
2
5.5
*

1
6
6
1.2
*
7
27.9
18.1

1   2.6
2-R0.6
∗ **Solder/Tab Terminal**

**PC Board Terminal**    **Solder/Tab Terminal**

---

3PDT Contacts

Gasket
Panel Thickness: 0.5 to 3.2 mm
Locking Ring
Mounting Bracket

1.95
8
8

**Round** ⌀22

**Square** □22

**Rectangular** 22 / 28

LOCK
Panel Thickness: 0.5 to 3.2 mm
2.8W × 0.5t

20.8
18.8
11.9
11.1
23

1
5
5
2
5.5
*

1
6
6
1.2
*
7
27.9
18.1

1   2.6
2-R0.6
∗ **Solder/Tab Terminal**

**PC Board Terminal**    **Solder/Tab Terminal**

## Terminal Arrangement (Bottom View)

**SPDT/DPDT Contacts**

TOP

| 22 | | 12 |
| 24 | | 14 |
| 21 | | 11 |

(SPDT contacts on the right only)

**3PDT Contacts**

TOP

| 32 | 22 | 12 |
| 34 | 24 | 14 |
| 31 | 21 | 11 |

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## Accessories

| Shape | | Material | Part Number | Remarks |
|---|---|---|---|---|
| Locking Ring Wrench ø18.0 60.0 | | Metal: Nickel-plated brass | MT-001 | Used to tighten the locking ring when installing the units on to the panel. |
| Lens Removal Tool 60.0 | | Stainless Steel | MT-101 | Used to remove the lens or button. |
| For Standard Bezels | Switch Guard (180° Spring return) Spring return | For round / square standard units | Guard: Polyacetal Base: Polyarylate | AL-K6SP | Degree of protection: IP65 Used to protect standard pushbuttons and illuminated pushbuttons from inadvertent operation. See page 32 for dimensions. With the gasket mounted on the switch, attach the switch guard and mount on the panel. Note: not applicable for flush mounted units. Select operator with built-in switch guard. |
| | | For rectangular standard units | | AL-KH6SP | |
| | Switch Guard for Single Board Mounting | For rectangular units | Guard: Polyacetal Base: Polyarylate | LA9Z-K3 | Degree of protection: IP65 With the gasket mounted on the switch, attach the switch guard and mount on the panel. See page 32 for dimensions. |
| | Rubber Boot for Standard Bezels 1 2 3 | 1. For round units | Silicon Rubber | LB9Z-D1 | Degree of protection: IP65 See page 31 for dimensions. See page 36 for mounting. |
| | | 2. For square units | | LB9Z-D2 | |
| | | 3. For rectangular units | | LB9Z-D3 | |
| | Mounting Hole Plug | Metal | Plug: Metal (Zinc diecast) Locking nut: Polyacetal Gasket: Nitrile rubber | AL-BM6 | Degree of protection: IP65 Tightening torque: 0.1 to 0.29 N•m See page 31 for dimensions. |
| | Mounting Hole Plug | Rubber | Nitrile rubber (black) | AL-B6 | Degree of protection: IP65 See page 31 for dimensions. |

# Accessories

| Shape | | Material | Part Number | Remarks |
|---|---|---|---|---|
| **For Flush Bezels** | **Rubber Boot for Flush Bezels** 1. | Silicon Rubber | | Degree of protection: IP65<br>See page 31 for dimensions.<br>See page 36 for mounting. |
| | 1. For round units | | LB9Z-D6 | |
| | 2. For square units | | LB9Z-D7 | |
| | 3. For rectangular units | | LB9Z-D8 | |
| | **Mounting Hole Plug** 1. | Plug: Polyamide (Black)<br><br>Gasket: Nitrile rubber<br><br>Mounting Plate: Stainless Steel | | Degree of protection: IP65<br>Panel thickness: 0.5 to 3.2 mm<br>See page 31 for dimensions. |
| | 1. For round units | | LB9Z-BS6 | |
| | 2. For square units | | LB9Z-BS7 | |
| | 3. For rectangular units | | LB9Z-BS8 | |
| | **Terminal Cover** 1.   2. | | | See page 32 for dimensions. |
| | 1. For SPDT/DPDT contacts | | LB9Z-VL2 | |
| | 2. For 3PDT contacts | | LB9Z-VL3 | |

## Accessory Dimensions (mm)

### Rubber Boot
Standard Bezel

For round units (LB9Z-D1)  | For square units (LB9Z-D2) | For rectangular units (LB9Z-D3)
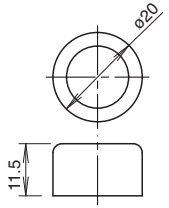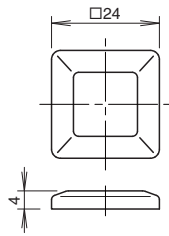
ø20 — 11.5 | □20 — 11.5 | 26 / 20 / 11.5
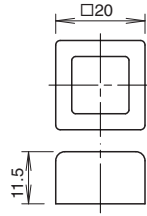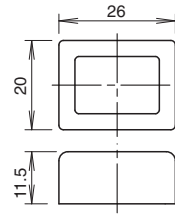
### Flush Bezel
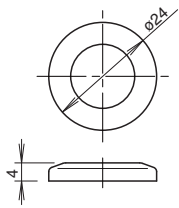
For round units (LB9Z-D6) | For square units (LB9Z-D7) | For rectangular units (LB9Z-D8)

ø24 — 4 | □24 — 4 | 30 / 24 / 4
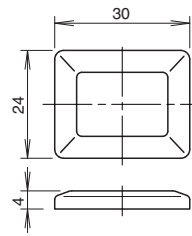
### Mounting Hole Plug
Standard Bezels

AL-B6

2  6 / ø18 / ø16.5 / ø9

$ø16.2^{+0.2}_{0}$

Mounting Hole Layout

AL-BM6

2.5  12 / ø17.8 / Gasket / Locking Ring / Panel Thickness: 0.5 to 6 mm

$ø16.2^{+0.2}_{0}$
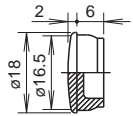
Mounting Hole Layout
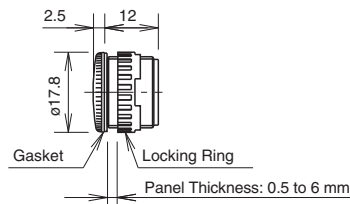
### Flush Bezels

For round units (LB9Z-BS6) | For square units (LB9Z-BS7) | For rectangular units (LB9Z-BS8)
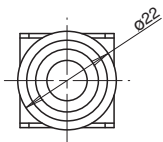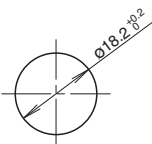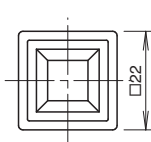
ø22 | □22 | 22 / 28

Gasket / Mounting Plate / Locking Ring / Panel Thickness: 0.5 to 3.2 mm / 18.1  2

Mounting Hole Layout

$ø18.2^{+0.2}_{0}$ | $□18.2^{+0.2}_{0}$ | $24.2^{+0.2}_{0}$ / $18.2^{+0.2}_{0}$
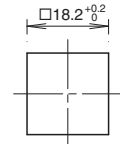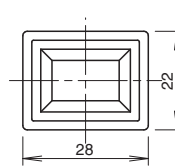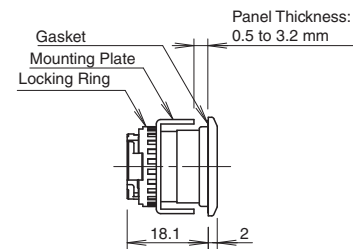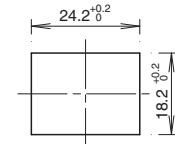
## Accessory Dimensions (mm) con't

### Terminal Cover
Standard Bezel

For SPDT/DPDT contacts (LB9Z-VL2)

29.9
TOP
12.5 4.4
19.6
17.6
2.2

For 3PDT contacts (LB9Z-VL3)

29.9
TOP
NC NC NC
32 22 12
NO NO NO
34 24 14
C C C
31 21 11
12.5
24.8
20.6
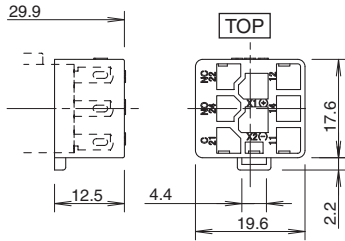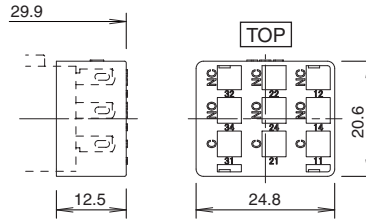
### Switch Guard for Standard Bezel Models

For round / square units (AL-K6SP)

18.0
11.0
13.0
23.5

[For round / square units]

For Single Board Mounting (LA9Z-K3)

24
13 11
23.5
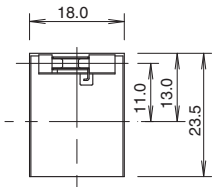
For rectangular units (AL-KH6SP )

24.0
11.0
13.0
23.5

[For rectangular units]

34
R22
33
Panel Thickness
0.5 to 2.0
14

32.6
R22
33
Panel Thickness
0.5 to 3.2
12.4
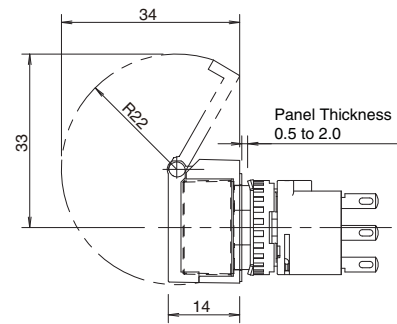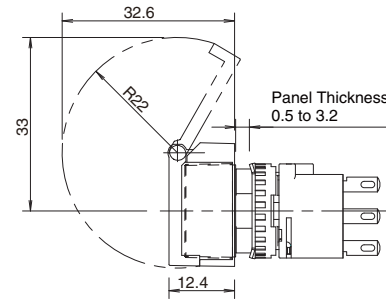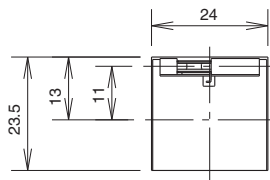
Note: The panel depth is the same for switches with
or without switch guards. Both models can be
installed on the same PC board.

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## Replacement Parts

| Shape | | Material | Part Number | Remarks |
|---|---|---|---|---|
| Lens | For round units | Polyarylate<br>ø15.4  H4mm | AL6M-L② | Specify the color code in place of ② in the part number.<br>A: Amber, C: Clear, G: Green, R: Red, S: Blue, Y: Yellow<br><br>Note: Use a clear lens for or white (PW) illumination. |
| | For square units | Polyarylate<br>□15.4,  H4mm | AL6Q-L② | |
| | For rectangular units | Polyarylate<br>W21.4 x H4 x D15.4mm | AL6H-L② | |
| Button | For round units | Polyarylate<br>□15.4, H4mm | AB6M-B② | Specify the color code in place of ② in the part number.<br>B: Black, G: Green, R: Red,<br>S: Blue W: White, Y: Yellow |
| | For square units | Polyarylate<br>□15.4, H4mm | AB6Q-B② | |
| | For rectangular units | Polyarylate<br>W21.4 x H4 x D15.4 | AB6H-B② | |
| Marking Plate | For round units | Acrylic<br>ø13.7  H0.8 | AL6M-② | Specify the color code in place of ② in the part number.<br>B: Black, W: White<br><br>See page 35 for dimensions and engraving area. |
| | For square units | Acrylic<br>□13.7,  H0.8mm | AL6Q-② | |
| | For rectangular units | Acrylic<br>W19.7 x H0.8 (0.4) x D13.7mm | AL6H-② | |
| Locking Ring | For all units | Polyamide<br>ø17.9,  H3.9mm | LB9Z-LNP | |
| Anti-rotation Ring | For standard bezel | Metal<br>(Stainless steel)<br>□17.9,  t0.6mm | LB9Z-LP1 | |
| Anti-rotation Ring | For flush bezel | Metal<br>(Stainless steel)<br>W21 x H8.2 x D20.6<br>t0.8mm | LB9Z-LP6 | |
| Spare Standard Key | For key selector switches | Nickel-plated Brass | AS6-SK | |
| Spare Wave key<br>Non-reversible Wave Key<br><br>Reversible Wave Key | For Wave key selector switches | Diecast zinc alloy (nickel plated)<br>W14 x  H2 x  D30.8mm | LA9Z-SK-⑤ | Specify Wave key number in place of ⑤ in the part number.<br>  0H: Standard key (reversible)<br>  1H to 2H: Reversible key<br>  3H to 6H: Non-reversible key |

### LB Series Replacement LED Unit

| Shape | Rated Operating Voltage | Part Number | ②Color Code | |
|---|---|---|---|---|
| LED Unit | DC5V | LB9Z-LED5② | A<br>G<br>PW<br>R<br>S | 1. Specify color code in place of the ② in the part number. R: Red, G: Green, A: Amber, S: Blue, PW: White<br>2. All illuminated LB series contain an LED unit.<br>3. Use a white (PW) LED unit for yellow (Y) illumination. |
| | AC/DC12V | LB9Z-LED1② | | |
| | AC/DC24V | LB9Z-LED2② | | |

# Precautions & Instructions

## ⚠ Safety Precautions

- Turn off the power to the LB series control units before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid burning your hand, use the lamp holder tool when replacing the lamps.

- For wiring, use wires of a proper size to meet voltage and current requirements. Solder correctly according to the instructions in "Wiring" and "Notes on Terminal Cover." Improper soldering may cause overheating and create a fire hazard. Also, when using tab terminals, use receptacles of appropriate size.

---

## Instructions

### Wiring

1. Solder the terminals at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu type is recommended. When soldering, do not touch the LB series with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminal or apply excessive force to the terminal.
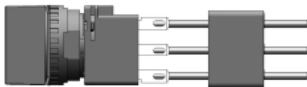2. Use non-corrosive liquid flux.

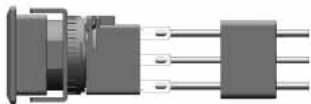### Terminal Cover
#### Solder/tab terminal

Insert the terminal cover into the contact block with the TOP markings on the contact block and the terminal cover in the same direction.

Note: When wiring, insert the lead wires into the terminal cover holes before soldering. After wiring, terminal covers cannot be installed.

#### Standard Bezel



#### Flush Bezel



### Operating Environment

- Do not use the LB series where corrosive gases exist or under an environment exceeding the operating temperature and humidity ranges. Otherwise, damages due to contact failure or change of surface color may occur.
- Major parts of the switch are plastic. Scratches or damages may occur when scraped with a sharp object or applied with excessive load or shock. Note that this may cause operation and appearance failure of the operator and bezel.
- Adherence of detergent, cutting oil, or special chemicals to the switch may result in operation failures and appearance failures such as change of surface color.

### Handling
#### Contacts (micro switch)

When using NC (normally closed) and NO (normally open) contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.
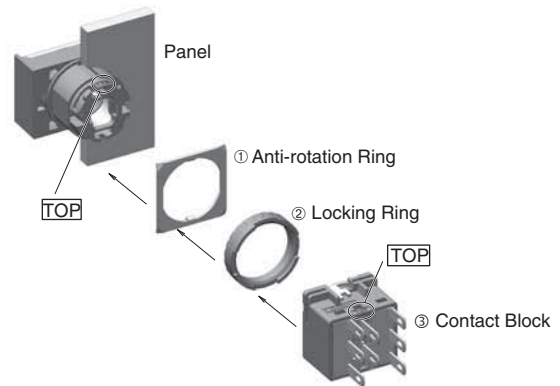
### Removing and Installing the Contact Block

1. Turn the locking lever on the contact block in the direction opposite to the arrow on the housing. Then the contact block can be removed.
2. Insert the contact block with the TOP markings on the contact block and the operator placed in the same direction. Then lock the units, turning the locking lever in the direction of the arrow.
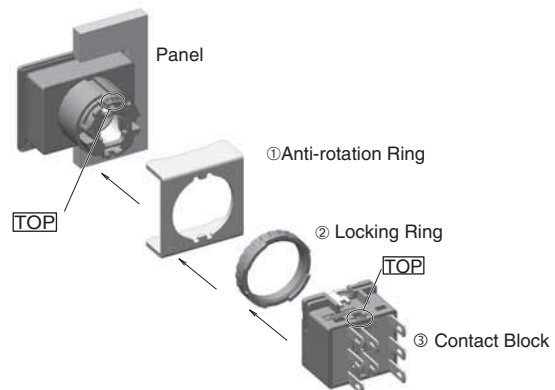


locking lever
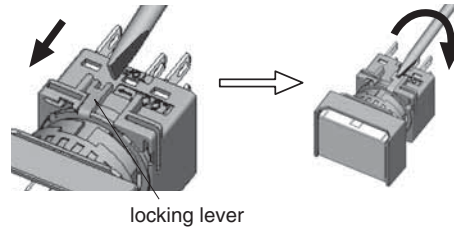
### Panel Mounting

Remove the contact block from the operator. Insert the operator into the panel cut-out from the front, then install the contact block to the operator.

#### Standard Bezel



Panel
① Anti-rotation Ring
TOP
② Locking Ring
TOP
③ Contact Block

#### Flush Bezel



Panel
①Anti-rotation Ring
TOP
② Locking Ring
TOP
③ Contact Block

### Notes on Mounting

Use the optional ring wrench (MT-001) to mount the operator onto the panel. Tightening torque should not exceed 0.7 N·m. Do not use pliers. Excessive tightening will damage the locking ring.

## Replacing the Lens

### Standard Bezel

From the opposite side of the TOP marking, remove the operator (lens, marking plate, and lens holder) using the optional lens removal tool (MT-101) by gripping the recesses of the color lens. Removing from the TOP side may damage the metallic bezel.
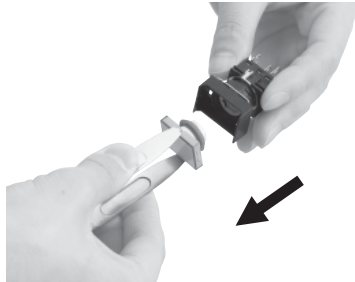


Removing the Operator (standard bezel)

### Flush Bezel

From the opposite side of the TOP marking, push the tip of the flat screwdriver to the groove of the color lens and pull out the operator (lens, marking plate, lens holder). Removing from the TOP side may damage the metallic bezel.



Removing the Operator (flush bezel)

## Replacing the Marking Plate

1. Remove the marking plate by pushing the lens from the rear to disengage the latches between the lens and holder, using the screwdriver as shown below.
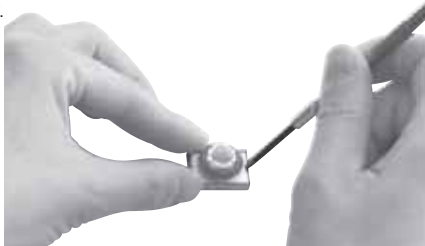


Note: A transparent film inside the lens holder is attached to the unit to make it waterproof and cannot be removed.

2. Insert a marking plate into the color lens, and press the lens onto the lens holder to engage the latches. Pay attention to the orientation of the marking plate.
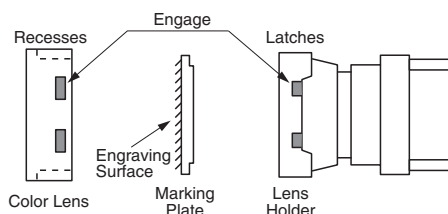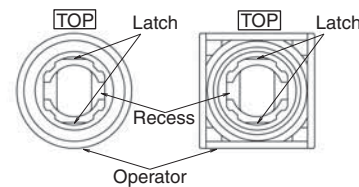


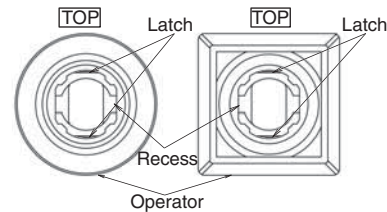## Lens Unit and Contact Block Installation

To insert the lens unit into the operator, press in the lens unit by making sure that the latch on the operator is aligned with the latch on the lens unit.
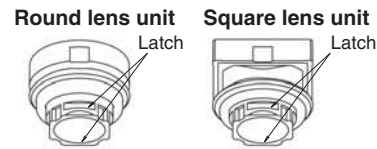


### Standard Bezel



### Flush Bezel



## Marking Plates and Films

For illuminated pushbuttons and pushbuttons with illuminated lens, legends and symbols can be engraved on the marking plates, or printed film can be inserted under the lens for labelling purposes.

### Marking Plate and Marking Film Size

| Lens | Round | Square | Rectangular |
|---|---|---|---|
| Built-in Marking Plate | ø12.0, 0.8, 12.0, ø13.7 (Engraving Area) | □12.0, 0.8, □13.7 (Engraving Area) | 12.0, 0.8, 18.0, 19.7×13.7 (Engraving Area) |
| Built-in Marking Plate | • Engraving must be made on the engraving area within 0.5 mm deep.  • The marking plate is made of white acrylic resin. | | |
| Applicable Marking Film | ø13.6, 11.8 | ø13.6 | 13.6, 19.6 |
| Applicable Marking Film | • Film thickness: 0.1 mm per film  • Marking film is not included.  • Recommended marking film: Polyester film | | |

## Marking Plate and Film Insertion Order
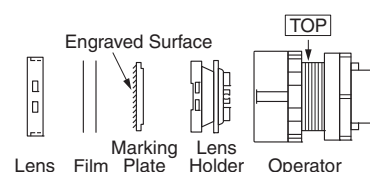


The marking plate must be engraved on thespecified side as shown above. Pay attention to the orientation of the marking plate.
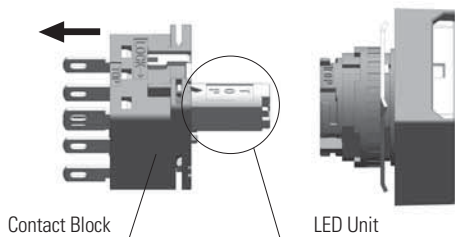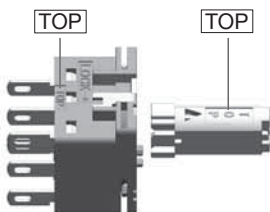
## Replacing the LED Unit

The LED unit can be replaced by pulling the lens unit out of the contact block.

Contact Block        LED Unit

### Orientation of the LED unit

Insert the LED unit into the contact block with the TOP markings on the contact block and LED unit in the same orientation.

TOP     TOP

### Notes on replacing the LED Unit

- When replacing the LED unit, make sure that static electricity is not applied.
- Make sure that the LB series has cooled down before replacing the LED unit.
- To avoid getting burned, be careful not to touch the unit while it is still hot.

### Notes on Using Quick Connect Terminals

1. 1) Use #110 tab quick connects, 0.5 mm-thick.
2. 2) When connecting the terminals on the left and center, make sure that surfaces of the quick connects face each other. Otherwise, a short-circuit may occur.
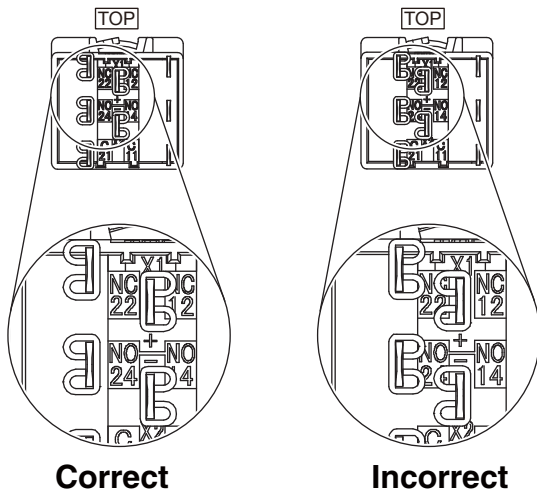
**Correct**       **Incorrect**

3. 3) Apply only horizontal force against the panel to the tab. The switch may be damaged if a force other than a horizontal force is applied.

## Installing Rubber Boots

When using the switches in enviroments subject to splashing water or an excessive amount of dust, make sure to use an optional rubber boot.

As shown in the drawing below, ① remove the gasket from the operator, and ② attach the rubber boot from the front (button side).
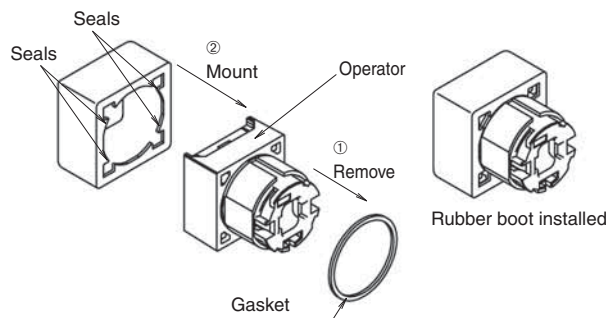
### Standard Bezels

For rectangular and square units, pull out the seals of the rubber boot and place them around the operator sleeve as shown below. Make sure that the seals are not twisted or tucked inside and that the gasket is removed, otherwise waterproof and dustproof characteristics are not ensured.
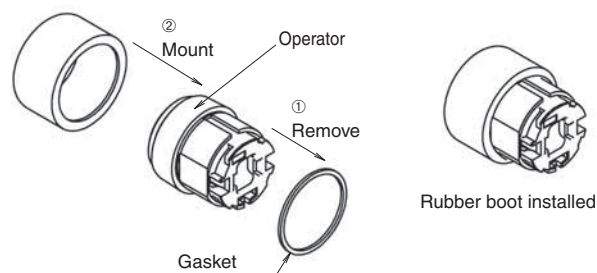
### How to Install the Rubber Boot

Rectangular
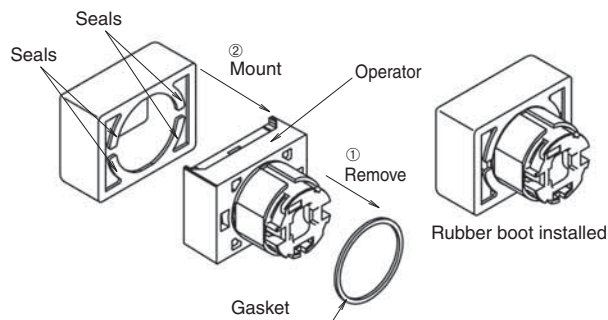
Square

Round

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## Flush Bezels

Mount the rubber boot so that the protrusion at the bottom surface of the operator fits with the recess on the operator, placing the rubber boot all around the operator sleeve.
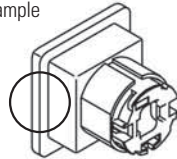
Make sure that the protrusion on the rubber boot and the recess on the operator fits correctly, otherwise, the waterproof and dustproof characteristics are not ensured.
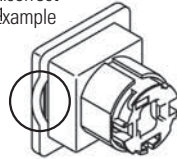
## How to Install the Rubber Boot
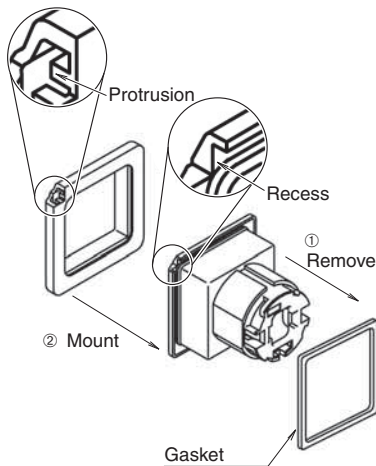


Note: Install the rubber boot before mounting the unit to the panel.

## Maintained Pushbuttons

Do not replace the buttons when the pushbutton is in the maintained position. Replacing the button in the maintained position may damage the internal mechanism. Also, do not remove the contact block with the button in the maintained position. The contact may not operate properly when the contact block is remounted.

## Pushbuttons and Illuminated Pushbuttons with Switch Guard

Do not apply force to the switch guard when the switch guard is not attached to a panel. When opening the switch guard, do not open more than 180°. The hinge may break.

## Selector Switches

When turning the operator or key, make sure that they are turned to the correct position.

## Selector Switches with Key

Observe the following instructions to prevent malfunction or damage.

• Do not remove the key from any key retained position.

• In addition to the standard key (key number 0H), six other key numbers are available. Use a key of the matching number with the key cylinder. The standard key does not have a key number indication.

• Keys are available in two types.
  Key numbers 0H (standard), 1H, and 2H are reversible keys which can be inserted in two ways.
  Key numbers 3H, 4H, 5H, and 6H are non-reversible keys. Make sure of correct insertion direction.
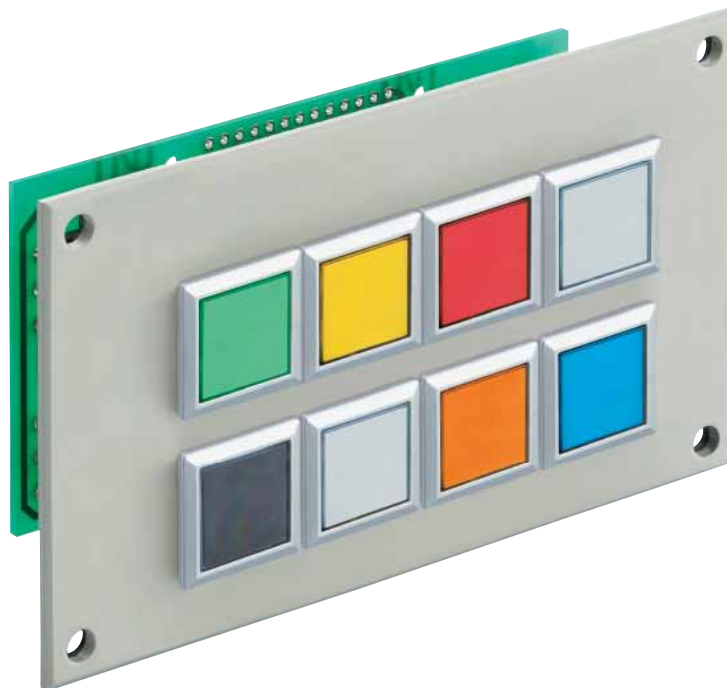
# Single Board Mounting

The IDEC's LB series is available for single board mounting.

ø6 drilled hole for operating the locking lever

Rear
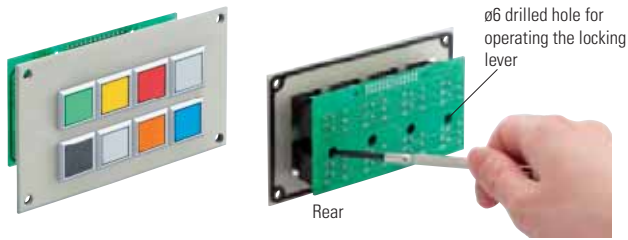
## Installing and Removing Contact Blocks

Turn the locking lever to install and remove contact blocks on a PC board using a screwdriver from a hole in the PC board.
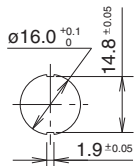
Determine the location of the switches so that the locking lever can be operated.

## Mounting Holes and Assembly Procedure

Drill mounting holes in the panel as shown below. When the units are mounted collectively, provide adequate clearance.
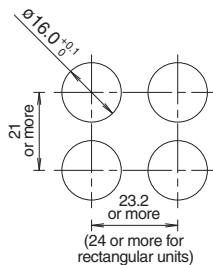
## Panel Cut-out

### Standard Bezels
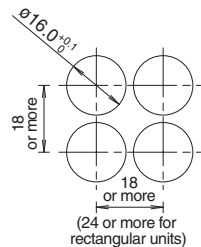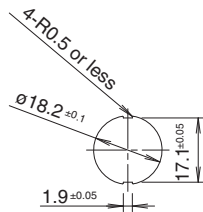
ø16.0 $^{+0.1}_{0}$     14.8 $^{±0.05}$

1.9 $^{±0.05}$

### Flush Bezels

4-R0.5 or less

ø18.2 $^{±0.1}$     17.1 $^{±0.05}$

1.9 $^{±0.05}$

### Standard Bezels

SPDT/DPDT Contactsv

ø16.0 $^{+0.1}_{0}$

18 or more

18 or more

(24 or more for rectangular units)

### 3PDT Contacts

ø16.0 $^{+0.1}_{0}$

21 or more

23.2 or more

(24 or more for rectangular units)

## Flush Bezels

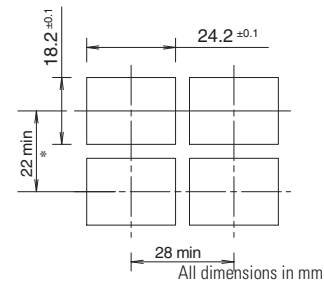### SPDT/DPDT Contacts

\* 45 mm minimum for switches with guard

ø18.2 $^{±0.1}$

22 min *

22 min

18.2 $^{±0.1}$

22 min *

22 min

18.2 $^{±0.1}$     24.2 $^{±0.1}$

22 min *

28 min

### 3PDT Contacts

\* 45 mm minimum for switches with guard

ø18.2 $^{±0.1}$

22 min *

23.2 min

18.2 $^{±0.1}$

22 min *

23.2 min

18.2 $^{±0.1}$     24.2 $^{±0.1}$

22 min *

28 min

All dimensions in mm.
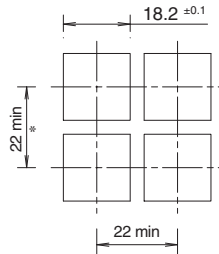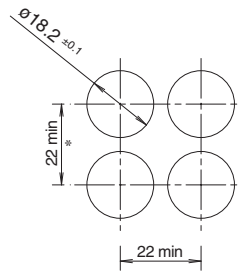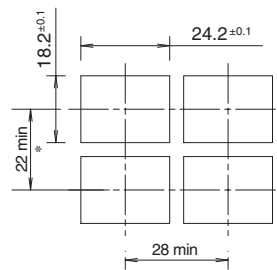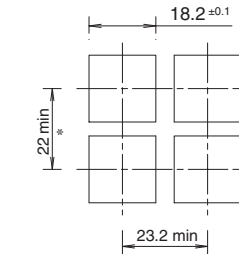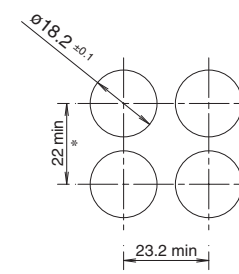
## Assembly Procedure

1. Install the operator to the panel.
2. Mount the contact block to the operator from the back of the panel.
3. Turn the locking lever to lock the contact block.
4. Insert a PC board and solder.

Notes:
1. Make sure that each terminal is inserted into the PC board correctly.
2. Do not apply tensile force to the connector cable for an extended period of time.
3. Do not expose the contact block to water.
4. Ensure to lock contact blocks when the contact blocks are installed on the operators.

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