# M16

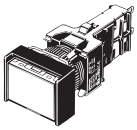
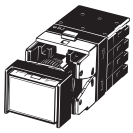
CSM_M16_DS_E_6_2

## Cylindrical 16-dia. Indicator

• Same basic design as the A16 Pushbutton Switch.

⚠ Refer to *Safety Precautions for All Pushbutton Switches/ Indicators* and *Safety Precautions* on page 11.

## List of Models

| | Appearance | Model |
|---|---|---|
| **Solder terminals** | Rectangular | M16-J |
| | Square | M16-A |
| | Round | M16-T |
| **Voltage-reduction lighting** |  | M16-□ |
| **Screw-less Clamp** |  | M16-□ |

## Model Number Structure

**Model Number Legend** ..... The model numbers used to order sets of Units are illustrated below. One set comprises the Display, Case, Lamp, and Socket.

For information on combinations, refer to *Ordering Information* on the following pages.

M 1 6 (1) 5 - (2) T (3) R - (4) 24D - (5) S

### (5) Terminal Type

| Symbol | Terminal type |
|---|---|
| No symbol | Solder terminals |
| S | Screw-less Clamp |

### (1) Degree of Protection

| Symbol | Protection |
|---|---|
| No symbol | IP40 |
| 5 | IP65 oil-resistant |

### (2) Shape of Display

| Symbol | Shape |
|---|---|
| J | Rectangular |
| A | Square |
| T | Round |

### (3) Color of Display

| Symbol | Color |
|---|---|
| R | Red |
| G | Green |
| Y | Yellow |
| PY | Pure yellow |
| W | White |
| PW | Pure white |
| A | Blue |

- Color illuminated models are also available (see page 4).
- Order the parts separately.

### (4) Light Source

| Symbol | Type | Operating voltage | Rated voltage |
|---|---|---|---|
| 5 | Incandescent lamp | 5 VAC/VDC | 6 VAC/VDC |
| 12 | | 12 VAC/VDC | 14 VAC/VDC |
| 24 | | 24 VAC/VDC | 28 VAC/VDC |
| 5D | LED | 5 ±5% VDC | 5 VDC |
| 12D | | 12 ±5% VAC/VDC | 12 VAC/VDC |
| 24D | | 24 ±5% VAC/VDC | 24 VAC/VDC |

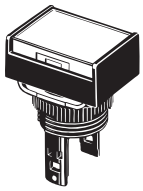
### Voltage Reduction Unit (24-V Built-in LED)

| Symbol | Type | Operating voltage | Rated voltage |
|---|---|---|---|
| T1 | LED | 100/110 VAC/VDC | 110 VAC/VDC |
| T2 | | 200/220 VAC/VDC | 220 VAC/VDC |

- Solder terminals are available only with 100-V models.
- Screw-less clamp connectors are used for 200-V models.

**Sets** ..... Select an Operation Unit Set (Operation Unit and Case) and a Socket Unit Set (Lamp and Socket Unit).

**Display Unit**

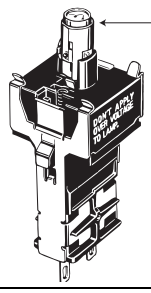


Rectangular, Square, Round

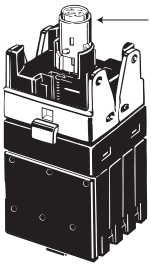
**Lighted Models**

**Socket Unit Set with Voltage-reduction Lighting**

Voltage-reduction lighting




**Socket Unit Set with Screw-less Clamp Connector**



## Ordering Information

**Ordering as a Set** ..... The model numbers used to order sets of Units are given in the following tables. One set comprises the Display, Case, Lamp, and Socket.

### M16□-J (Rectangular) Models

#### Solder Terminal Models

| Appearance | Lighting | Degree of protection | IP40 | IP65 oil-resistant | Display color symbol * |
|---|---|---|---|---|---|
| Rectangular (M16-J) | LED without Voltage Reduction Unit | 5 VDC | **M16-J□-5D** | **M165-J□-5D** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow<br>PW: pure white |
| | | 12 VAC/VDC | **M16-J□-12D** | **M165-J□-12D** | |
| | | 24 VAC/VDC | **M16-J□-24D** | **M165-J□-24D** | |
| | Incandescent lamp | 5 VAC/VDC | **M16-J□-5** | **M165-J□-5** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow |
| | | 12 VAC/VDC | **M16-J□-12** | **M165-J□-12** | |
| | | 24 VAC/VDC | **M16-J□-24** | **M165-J□-24** | |

* Enter the desired color symbol into the box in the model number.

### M16□-A (Square) Models

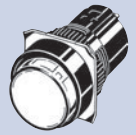
#### Solder Terminal Models

| Appearance | Lighting | Degree of protection | IP40 | IP65 oil-resistant | Display color symbol * |
|---|---|---|---|---|---|
| Square (M16-A) | LED without Voltage Reduction Unit | 5 VDC | **M16-A□-5D** | **M165-A□-5D** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow<br>PW: pure white |
| | | 12 VAC/VDC | **M16-A□-12D** | **M165-A□-12D** | |
| | | 24 VAC/VDC | **M16-A□-24D** | **M165-A□-24D** | |
| | Incandescent lamp | 5 VAC/VDC | **M16-A□-5** | **M165-A□-5** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow |
| | | 12 VAC/VDC | **M16-A□-12** | **M165-A□-12** | |
| | | 24 VAC/VDC | **M16-A□-24** | **M165-A□-24** | |

* Enter the desired color symbol into the box in the model number.

### M16□-T (Round) Models

#### Solder Terminal Models

| Appearance | Lighting | Degree of protection | IP40 | IP65 oil-resistant | Display color symbol * |
|---|---|---|---|---|---|
| Round (M16-T)  | LED without Voltage Reduction Unit | 5 VDC | **M16-T□-5D** | **M165-T□-5D** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow<br>PW: pure white |
| | | 12 VAC/VDC | **M16-T□-12D** | **M165-T□-12D** | |
| | | 24 VAC/VDC | **M16-T□-24D** | **M165-T□-24D** | |
| | Incandescent lamp | 5 VAC/VDC | **M16-T□-5** | **M165-T□-5** | R: red<br>Y: yellow<br>G: green<br>A: blue<br>W: white<br>PY: pure yellow |
| | | 12 VAC/VDC | **M16-T□-12** | **M165-T□-12** | |
| | | 24 VAC/VDC | **M16-T□-24** | **M165-T□-24** | |

Note: Neon lamps are not available with models that are ordered as a set. They must be ordered individually if required.
* Enter the desired color symbol into the box in the model number.

Individual models: Refer to pages 4 to 7.
(The Display, Lamp, Case, and Switch can be ordered separately.)

■ Accessories, replacements, and tools: Refer to the A16.
■ Ratings and characteristics: Refer to the A16.
■ Dimensions: Refer to pages 9 to 10.

## Ordering Information

**Ordering Individually** ..... Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.

**Display (Refer to page 6.)**

Rectangular

Square

Round

Note: Use IP40 Displays in combination with IP40 Cases and use IP65 Displays in combination with IP65 Cases.
The Display has a legend plate built in.

**Case (Refer to page 7.)**

Note: Display Units, which are combinations of Displays and Cases, are also available.

**Lighted Models**

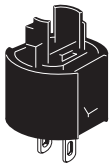
**Lamp (Refer to page 7.)**

LED

Incandescent Lamp

**Socket (Refer to page 7.)**

Solder Terminals
(Without Voltage Reduction Unit)



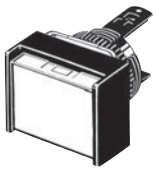
Note: Socket Units, which are combinations of Lamps and Sockets, are also available.

- For colored illumination, order the Display, Case, Lamp, and Socket Unit separately.

## Ordering Information

**Sets**..... Sets that combined a Display and Cases are also available.

**Display Set**

| Appearance | Classification | | Model |
|---|---|---|---|
|  | IP40 | Rectangular (2-way guard) | **A16-J□M** |
| | | Square (2-way guard) | **A16-A□M** |
| | | Round (projecting model) | **A16-T□M** |
| | Oil-resistant IP65 | Rectangular (2-way guard) | **A165-J□M** |
| | | Square (2-way guard) | **A165-A□M** |
| | | Round (projecting model) | **A165-T□M** |

Insert one of the following symbols into the box in the model number.

| Symbol | Color | Remarks |
|---|---|---|
| R | Red | LED and incandescent lamps |
| Y | Yellow | |
| PY | Pure yellow | |
| A | Blue | |
| W | White* | |
| GY | Green | LED only |
| G | Green | Incandescent only |

* Use this pushbutton color if the illumination color of the LED is white or pure white.

### Socket Unit Sets with Incandescent Lamps

| Appearance | Classification | | Model |
|---|---|---|---|
| | 5 V | Solder terminals | **M16-5** |
| | 12 V | | **M16-12** |
| | 24 V | | **M16-24** |

### Socket Unit Sets with LEDs

| Appearance | Classification | Model |
|---|---|---|
| | Solder terminals | **M16-□-□** |

### Socket Unit Sets with Voltage-reduction Lighting (Solder Terminals)

| Appearance | Classification | Model |
|---|---|---|
| | 100/110 VAC/VDC | **M16-□-T1** |

Note: The LED has 24-VAC/VDC circuit built in.

### Socket Unit Sets with Screw-less Clamp Connectors

| Appearance | Classification | | | Model |
|---|---|---|---|---|
| | Display | No voltage-reduction lighting | | **M16-□-□-S** |
| | | Voltage-reduction lighting (See note.) | 100/110 VAC/VDC | **M16-□-T1-S** |
| | | | 200/220 VAC/VDC | **M16-□-T2-S** |

Note: 1. The LED built into the 100-V model is 24 VAC/VDC.
2. The LED built into the 200-V model is high-intensity 24 VAC/VDC.

Insert symbols into the boxes with circled numbers.

**1**

| Symbol | Color |
|---|---|
| R | Red |
| Y | Yellow |
| A | Blue |
| W | White |
| G | Green |

**2**

| Symbol | Type | Operating voltage |
|---|---|---|
| 5D | LED | 5 VDC |
| 12D | | 12 VAC/VDC |
| 24D | | 24 VAC/VDC |

## Ordering Information

**Ordering Individually** ..... Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.

**Display**

**For LED-lighted Models**

| Sealing | IP40 | | | IP65 oil-resistant | | |
|---|---|---|---|---|---|---|
| Appearance / Color of Display | Rectangular | Square | Round | Rectangular | Square | Round |
| Red | A16L-JR | A16L-AR | A16L-TR | A165L-JR | A165L-AR | A165L-TR |
| Yellow | A16L-JY | A16L-AY | A16L-TY | A165L-JY | A165L-AY | A165L-TY |
| Pure yellow | A16L-JPY | A16L-APY | A16L-TPY | A165L-JPY | A165L-APY | A165L-TPY |
| Green | A16L-JGY | A16L-AGY | A16L-TGY | A165L-JGY | A165L-AGY | A165L-TGY |
| White | A16L-JW | A16L-AW | A16L-TW | A165L-JW | A165L-AW | A165L-TW |
| Blue | A16L-JA | A16L-AA | A16L-TA | A165L-JA | A165L-AA | A165L-TA |

**Incandescent Lamps (With the exception of green, the Units are the same as for LEDs.)**

| Sealing | IP40 | | | IP65 oil-resistant | | |
|---|---|---|---|---|---|---|
| Appearance / Color of Display | Rectangular | Square | Round | Rectangular | Square | Round |
| Red | A16L-JR | A16L-AR | A16L-TR | A165L-JR | A165L-AR | A165L-TR |
| Yellow | A16L-JY | A16L-AY | A16L-TY | A165L-JY | A165L-AY | A165L-TY |
| Pure yellow | A16L-JPY | A16L-APY | A16L-TPY | A165L-JPY | A165L-APY | A165L-TPY |
| Green | A16L-JG | A16L-AG | A16L-TG | A165L-JG | A165L-AG | A165L-TG |
| White | A16L-JW | A16L-AW | A16L-TW | A165L-JW | A165L-AW | A165L-TW |
| Blue | A16L-JA | A16L-AA | A16L-TA | A165L-JA | A165L-AA | A165L-TA |

Ordering set combinations: Refer to page 3.

■ Accessories, replacements, and tools: Refer to the A16.
■ Ratings and characteristics: Refer to the A16.
■ Dimensions: Refer to pages 9 to 10.

## Ordering Information

**Ordering Individually** ..... Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.

### Lamp

#### LED

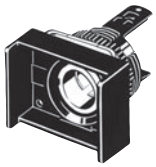
| Operating voltage / Color | High intensity | | |
|---|---|---|---|
| | 5 VDC | 12 VAC/VDC | 24 VAC/VDC |
| Red | **A16-5DSR** | **A16-12DSR** | **A16-24DSR** |
| Yellow | **A16-5DSY** | **A16-12DSY** | **A16-24DSY** |
| Green | **A16-5DSG** | **A16-12DSG** | **A16-24DSG** |
| White * | **A16-5DSW** | **A16-12DSW** | **A16-24DSW** |
| Blue | **A16-5DA** | **A16-12DA** | **A16-24DA** |
| Pure white | **A16-5DPW** | **A16-12DPW** | **A16-24DPW** |

* Use the white LED when the required illumination color is white or pure yellow.

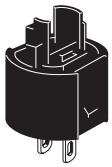
#### Incandescent Lamp

| Appearance | Operating voltage | Model |
|---|---|---|
| | 5 VAC/VDC | **A16-5** |
| | 12 VAC/VDC | **A16-12** |
| | 24 VAC/VDC | **A16-24** |

### Case

| Appearance | Classification | | Model number |
|---|---|---|---|
|  | IP40 | Rectangular | **A16-CJM** |
| | | Square | **A16-CAM** |
| | | Round | **A16-CTM** |
| | IP65 oil-resistant | Rectangular | **A165-CJM** |
| | | Square | **A165-CAM** |
| | | Round | **A165-CTM** |

### Socket

| Appearance | Classification | | | Model number |
|---|---|---|---|---|
|  Solder terminals | Solder terminals | | | **M16-0** |
| | PCB terminals | | | **M16-0P** |
| | Screw-Less Clamp | | | **M16-S** |
| | Solder terminals | Voltage-reduction lighting | 100 V | **M16-T1** |
| | Screw-less Clamp | | 100 V | **M16-T1-S** |
| | | | 200 V | **M16-T2-S** |

Ordering set combinations: Refer to page 3.

■ Accessories, replacements, and tools: Refer to the A16.
■ Ratings and characteristics: Refer to the A16.
■ Dimensions: Refer to pages 9 to 10.

# Specifications

## Approved Standard Ratings

### UL, cUL (File No. E76675)

LED: 24 VDC max.
Incandescent lamp: 24 VDC/VAC max.

Note: Certification has been obtained for the Socket Unit.
For detailed information on individual products that have received certification, consult your supplier.

## Ratings

| | |
|---|---|
| **Ambient operating temperature** | –10°C to 55°C (with no icing or condensation) |
| **Ambient operating humidity** | 35% to 85%RH |
| **Ambient storage temperature** | –25°C to 65°C (with no icing or condensation) |

### Super-bright LED

| Rated voltage | Rated current | Operating voltage | Built-in limiting resistance |
|---|---|---|---|
| 5 VDC | 8 mA | 5 VDC ±5% | Red, yellow, white: 300 Ω<br>Green, blue, pure white: 160 Ω |
| 12 VAC/VDC | | 12 VAC/VDC ±5% | Red, yellow, white: 1 kΩ<br>Green, blue, pure white: 910 Ω |
| 24 VAC/VDC | | 24 VAC/VDC ±5% | 2.4 kΩ |

### Incandescent Lamp

| Rated voltage | Rated current | Operating voltage |
|---|---|---|
| 6 VAC/VDC | 60 mA | 5 VAC/VDC |
| 14 VAC/VDC | 40 mA | 12 VAC/VDC |
| 28 VAC/VDC | 24 mA | 24 VAC/VDC |

## Characteristics

### Screw-less Clamp

| Item | Type | Screw-less Clamp | | | |
|---|---|---|---|---|---|
| **Recommended wire size** | | 0.5 $mm^2$ twisted wire or 0.8 mm-dia. solid wire | | | |
| **Usable wires and tensile strength** | **Twisted wire** | 0.3 $mm^2$ | 0.5 $mm^2$ | 0.75 $mm^2$ | 1.25 $mm^2$ |
| | **Solid wire** | 0.5 mm dia. | 0.8 mm dia. | 1.0 mm dia. | --- |
| | **Tensile strength** | 10 N | 20 N | 30 N | 40 N |
| **Length of exposed wire** | | 10 ±1 mm | | | |
| **Compliant standards** | | JIS C 2811 Terminal Blocks for Industrial Use | | | |

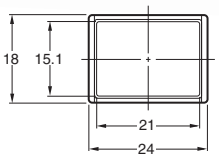
## Dimensions (Refer to the A16 for details of panel cutout dimensions.)

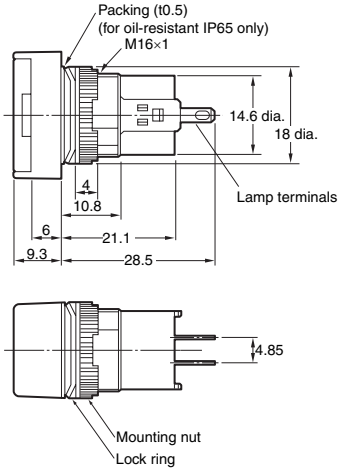
(Unit: mm)

### Rectangular

**M16□-J**

**Solder terminals**

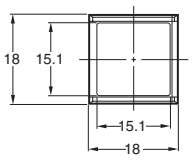


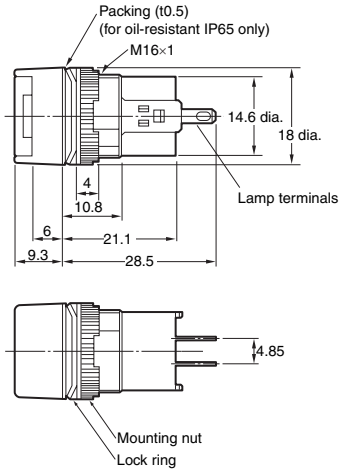




### Square

**M16□-A**

**Solder terminals**

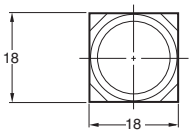


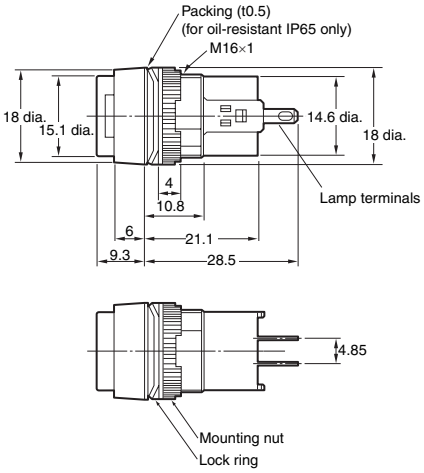




### Round

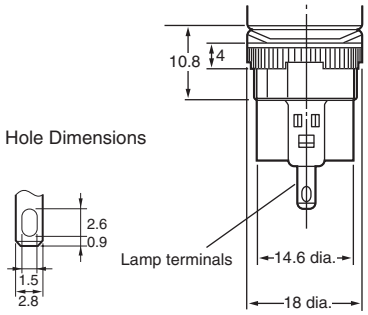
**M16□-T**

**Solder terminals**




Terminal Hole Dimensions



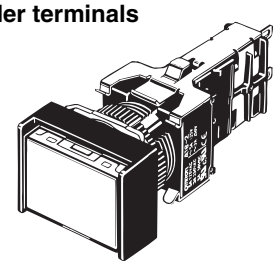
## Dimensions

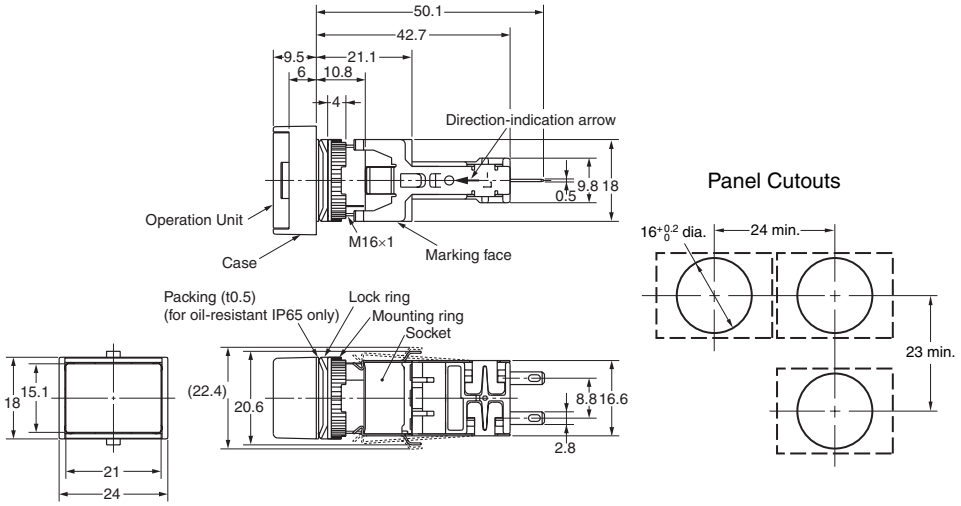
(Unit: mm)

### Rectangular

**M16□-J□-T1**

**Voltage-reduction lighting, solder terminals**

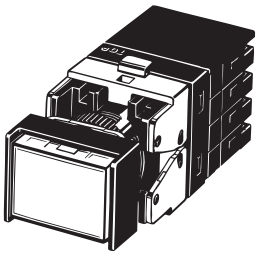


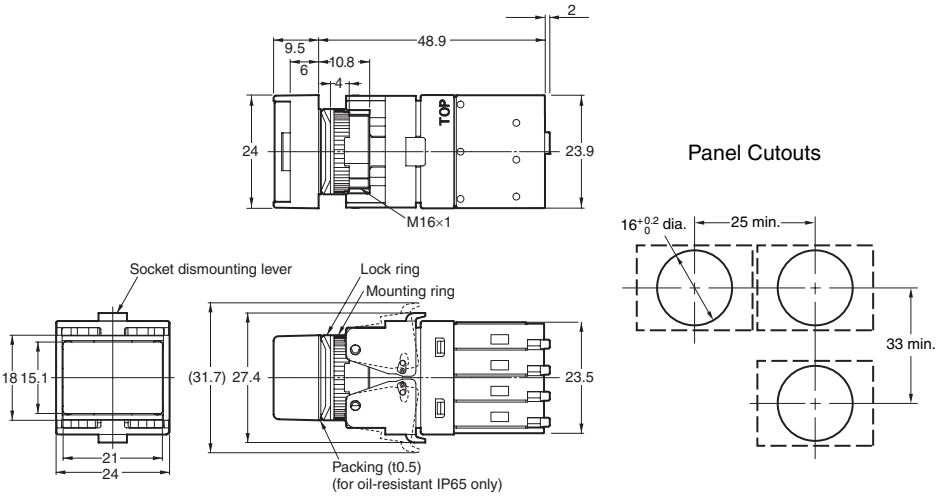



### Rectangular

**M16□-J□-S**

**Screw-less Clamp**

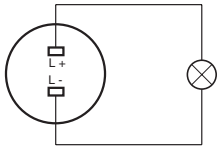
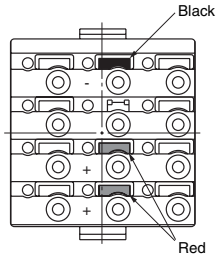
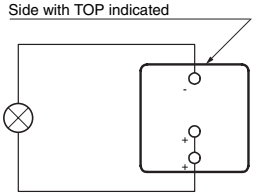
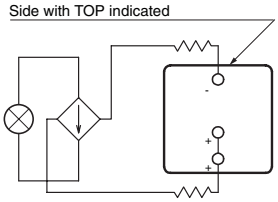




## Dimensions

**(All units are in millimeters unless otherwise indicated.)**

### Terminal Arrangement

| Solder Terminals | Screw-less Clamp | Voltage-reduction Lighting |
|---|---|---|
| (BOTTOM VIEW)<br>  <br><br>The L+ is not shown on the Socket Unit. |  <br><br>(BOTTOM VIEW)<br>Side with TOP indicated<br>  | (BOTTOM VIEW)<br>Side with TOP indicated<br>  <br>Models with voltage-reduction lighting have a circuit to reduce voltage built in. |

### Accessories, Replacements, and Tools

The accessories, replacements, and tools are also used with the A16 Pushbutton Switch. Refer to the A16 datasheet.

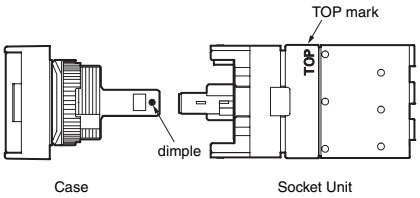
## Safety Precautions

**Refer to *Safety Precautions for All Pushbutton Switches/Indicators* and *Safety Precautions* for the A16.**

### Precautions for Correct Use

#### Mounting

- When mounting the Case onto the Socket Unit, ensure that the orientation is correct. Perform mounting with the dimple on the Case and the TOP mark on the Socket Unit facing in the same direction.




#### Wiring

- When using stranded wire, gather the ends of the strands together before wiring.
- When wiring, insert the wire until it comes into contact with something. After wiring is completed, pull on the wires to confirm that they are connected securely.
- After wiring, ensure that continuous pressure is not applied to the terminals.
- Refer to internal connections diagrams and confirm the terminal numbers before performing wiring.

#### Screw-less Clamps

#### Mounting Procedure

1. Strip a length of 10 mm off the end of the wire (allowable range: 10±1 mm).
2. Bunch wire strands together and straighten them.
3. Insert the wire into the insertion hole while pressing the release button at the side of the hole. (Using a precision screwdriver is recommended.)
4. Let go of the release button to lock the wire into place.
5. After locking, pull on the wire gently to confirm that it is securely locked.

#### Removing Procedure

1. Remove wires by pulling them while pressing the release button.

Note: When reusing wires that have already been locked, cut off the end of the wire and strip the wire again before using.

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