Indicator (Cylindrical 16-dia.)

# Cylindrical 16-dia. Indicator

• Same basic design as the A16 Pushbutton Switch.



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

### **List of Models**

	Appearance	Model
	Rectangular	M16-J
Solder terminals	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.

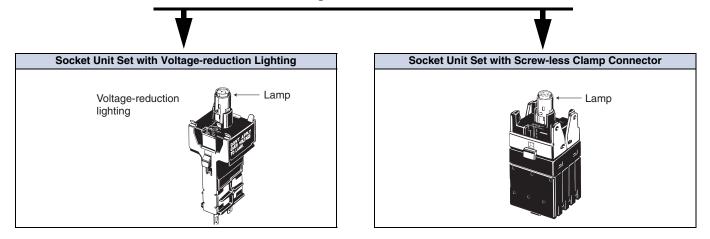


(1) Degi	ree of Protection	(2) Shap	e of Display	(3) Colo	r of Display	(4) Ligh	nt Source		
Symbol	Protection	Symbol	Shape	Symbol	Color	Symbol	Туре	Operating voltage	Rated voltage
No	IP40	J	Rectangular	R	Red	5	Incondeccent	5 VAC/VDC	6 VAC/VDC
symbol	11 40	Α	Square	G	Green	12	Incandescent lamp	12 VAC/VDC	14 VAC/VDC
5	IP65 oil-resistant	Т	Round	Y	Yellow	24	lamp	24 VAC/VDC	28 VAC/VDC
				PY	Pure yellow	5D		5 ±5% VDC	5 VDC
				W	White	12D	LED	$12 \pm 5\%$ VAC/VDC	12 VAC/VDC
				PW	Pure white	24D		$24 \pm 5\%$ VAC/VDC	24 VAC/VDC
				A	Blue	Voltage	e Reduction	Unit (24-V Built-in	LED)
					ninated models available (see	Symbol	Туре	Operating voltage	Rated voltage
				page 4).		T1		100/110 VAC/VDC	110 VAC/VDC
				<ul> <li>Order the parts separately.</li> </ul>		T2	T2 LED	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									
				D	isplay Unit				

V

Rectangular, Square, Round

Lighted Models



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)		5 VDC	M16-J□-5D	M165-J□-5D	R: red Y: yellow
neetangular (into b)	LED without Voltage Reduction Unit	12 VAC/VDC	M16-J□-12D	M165-J□-12D	G: green A: blue W: white
		24 VAC/VDC	M16-J□-24D	M165-J□-24D	PY: pure yellow PW: pure white
		5 VAC/VDC	M16-J□-5	M165-J□-5	R: red Y: yellow
		12 VAC/VDC	M16-J□-12	M165-J□-12	G: green A: blue
		24 VAC/VDC	M16-J□-24	M165-J□-24	W: white PY: pure yellow

 $^{\ast}$  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 *
R		5 VDC	M16-A□-5D	M165-A□-5D	R: red Y: yellow
	LED without Voltage Reduction Unit	12 VAC/VDC	M16-A□-12D	M165-A□-12D	G: green A: blue W: white
		24 VAC/VDC	M16-A□-24D	M165-A□-24D	PY: pure yellow PW: pure white
		5 VAC/VDC	M16-A□-5	M165-A□-5	R: red Y: yellow
		12 VAC/VDC	M16-A□-12	M165-A□-12	G: green A: blue
		24 VAC/VDC	M16-A□-24	M165-A□-24	W: white PY: pure yellow

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

### M16 -T (Round) Models

### **Solder Terminal Models**

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

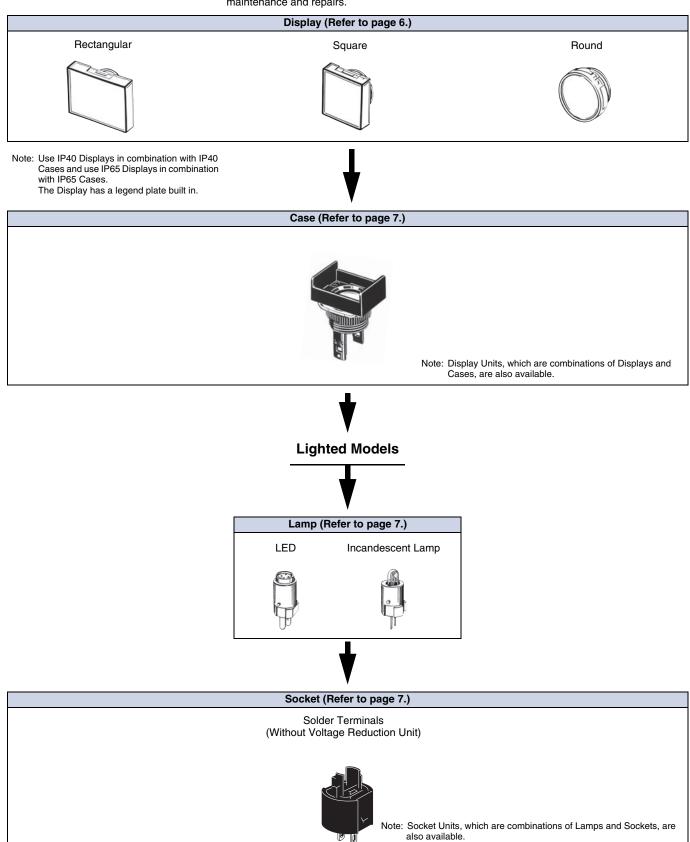
Note: Neon lamps are not available with models that are ordered as a set. They must be ordered individually if required. \* Enter the desired color symbol into the box in the model number.

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 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.



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

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

### **Display Set**

Appearance	Classi	Model	
		Rectangular (2-way guard)	A16-J⊡M
J.S.	IP40	Square (2-way guard)	A16-A□M
		Round (projecting model)	A16-T⊡M
		Rectangular (2-way guard)	A165-J□M
	Oil-resistant IP65	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	
Y	Yellow	
PY	Pure yellow	LED and incandes- cent lamps
А	Blue	oon ampo
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

				SUCKE
Appearance	C	Classification	Model	Apr
 A	5 V		M16-5	App
3	12 V	Solder terminals	M16-12	
B B	24 V		M16-24	

### Socket Unit Sets with LEDs

Appearance	Classification	Model
	Solder terminals	M16-1-2

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

Appearance	Classification	Model
	100/110 VAC/VDC	M16-1]-T1

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

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

Appearance	Classification			Model
		No voltage-r	eduction lighting	M16-1-2-S
Display	Voltage-reduc- tion lighting	100/110 VAC/VDC	M16-1-T1-S	
		(See note.)	200/220 VAC/VDC	M16-1-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	
А	Blue	
W	White	
G	Green	

2

Symbol	Туре	Operating voltage
5D		5 VDC
12D	LED	12 VAC/VDC
24D		24 VAC/VDC

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### Display

### For LED-lighted Models

Sealing	IP40			IP65 oil-resistant		
	Rectangular	Square	Round	Rectangular	Square	Round
Appearance			$\bigcirc$			
Color of Display						
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		
	Rectangular	Square	Round	Rectangular	Square	Round
Appearance						$\bigcirc$
Color of Display			$\sim$	$\rightarrow$		
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 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	High intensity			
Color	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	Classif	Model number	
		Rectangular	A16-CJM
	IP40	Square	A16-CAM
		Round	A16-CTM
	IP65 oil-resistant	Rectangular	A165-CJM
		Square	A165-CAM
		Round	A165-CTM

#### Socket

Appearance	Class		Model number	
	Solder	M16-0		
	PCB to	M16-0P		
	Screw-Less Clamp			M16-S
	Solder terminals	Voltage- reduction	100 V	M16-T1
Solder terminals	Sorow loss Clamp		100 V	M16-T1-S
	Screw-less Clamp lighting		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		5 VDC ±5%	Red, yellow, white: 300 $\Omega$ Green, blue, pure white: 160 $\Omega$
12 VAC/VDC	8 mA	12 VAC/VDC ±5%	Red, yellow, white: 1 k $\Omega$ Green, blue, pure white: 910 $\Omega$
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

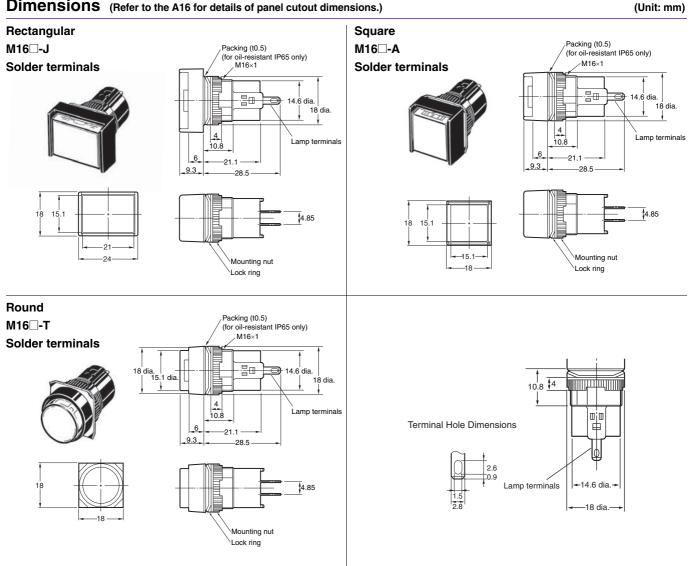
### Characteristics

### Screw-less Clamp

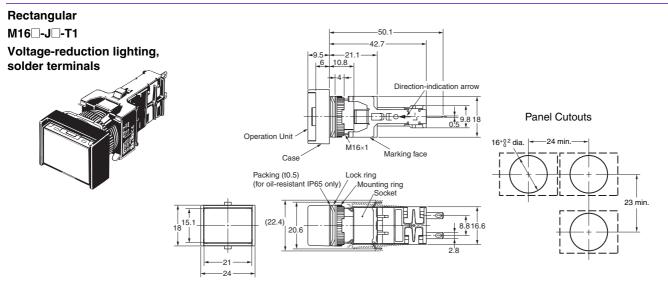
Item	Туре	Screw-less Clamp			
Recommended wire size		0.5 mm <sup>2</sup> twisted wire or 0.8 mm-dia. solid wire			
Usable wires	Twisted wire	0.3 mm <sup>2</sup>	0.5 mm <sup>2</sup>	0.75 mm <sup>2</sup>	1.25 mm <sup>2</sup>
and tensile	Solid wire	0.5 mm dia.	0.8 mm dia.	1.0 mm dia.	
strength	Tensile strength	10 N	20 N	30 N	40 N
Length of exp	osed wire	10 ±1 mm			
Compliant sta	ndards	JIS C 2811 Terminal Blocks for Industrial Use			trial Use

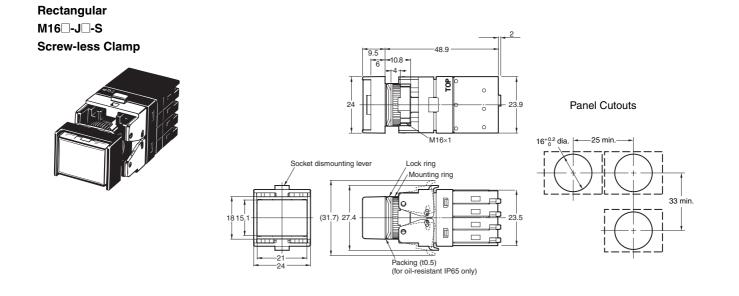
# M16

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

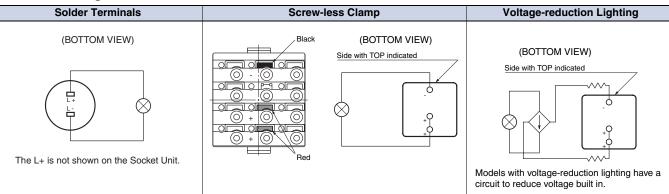


## Dimensions





### **Terminal Arrangement**



### Accessories, Replacements, and Tools

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

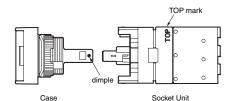
### **Safety Precautions**

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:  $10\pm1$  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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