M16

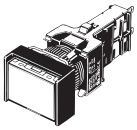
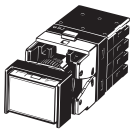
CSM_M16_DS_E_6_1

Cylindrical 16-dia. Indicator

• Same basic design as the A16 Pushbutton Switch.

⚠ Refer to *Safety Precautions for All Pushbutton Switches* 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

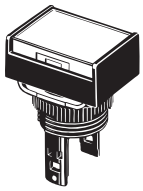
Voltage Reduction Unit (24-V Built-in LED)

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

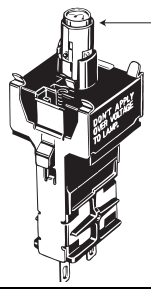


Rectangular, Square, Round

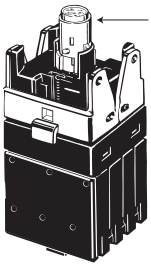
Lighted Models

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 Y: yellow G: green A: blue W: white PY: pure yellow 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 Y: yellow G: green A: blue W: white 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 Y: yellow G: green A: blue W: white PY: pure yellow 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 Y: yellow G: green A: blue W: white 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 Y: yellow G: green A: blue W: white PY: pure yellow 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 Y: yellow G: green A: blue W: white 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.)

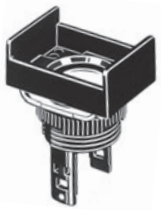
Rectangular

Square

Round

Note: Use IP40 Displays in combination with IP40 Sockets and use IP65 Displays in combination with IP65 Sockets.
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

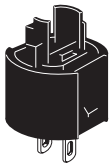
Lamp (Refer to page 7.)

LED

Incandescent Lamp

Socket (Refer to page 7.)

Solder Terminals
(Without Voltage Reduction Unit)



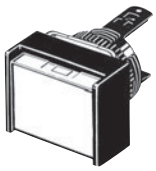
Note: Socket Units, which are combinations of Lamps and Sockets, are also available.

- 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

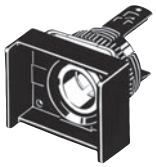
Operating voltage / Color	High intensity		
	5 VDC	12 VAC/VDC	24 VAC/VDC
Red	**A16-5DSR**	**A16-12DSR**	**A16-24DSR**
Yellow	**A16-5DSY**	**A16-12DSY**	**A16-24DSY**
Green	**A16-5DSG**	**A16-12DSG**	**A16-24DSG**
White *	**A16-5DSW**	**A16-12DSW**	**A16-24DSW**
Blue	**A16-5DA**	**A16-12DA**	**A16-24DA**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

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

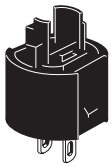
Incandescent Lamp

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 Green, blue, pure white: 160 Ω
12 VAC/VDC		12 VAC/VDC ±5%	Red, yellow, white: 1 kΩ 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			

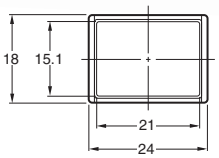
Dimensions (Refer to the A16 for details of panel cutout dimensions.)

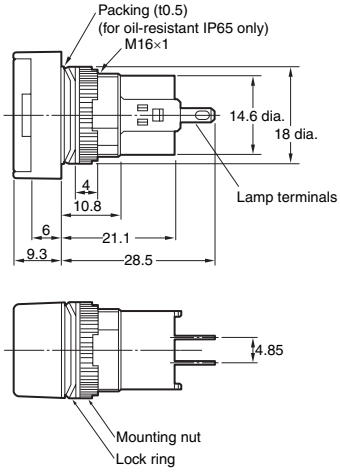
(Unit: mm)

Rectangular

M16□-J

Solder terminals

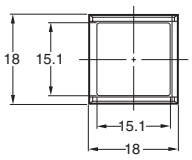


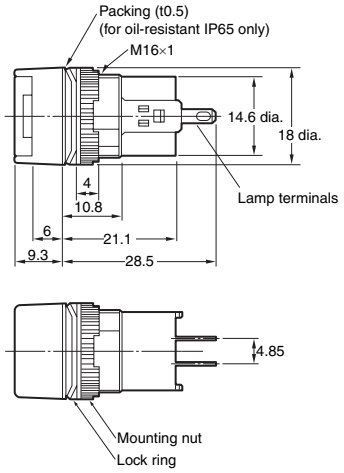


Square

M16□-A

Solder terminals

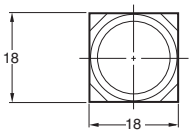


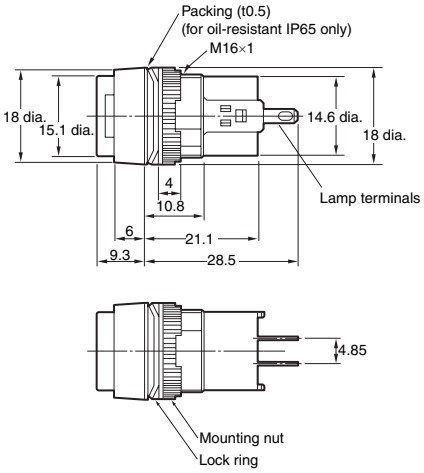


Round

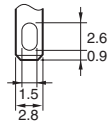
M16□-T

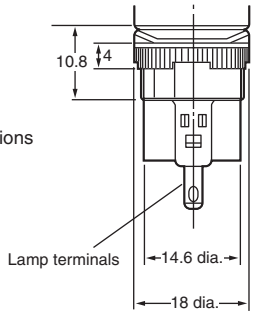
Solder terminals





Terminal Hole Dimensions





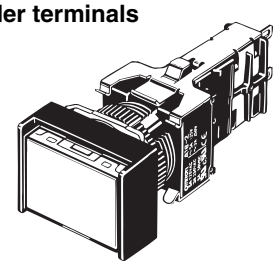
Dimensions

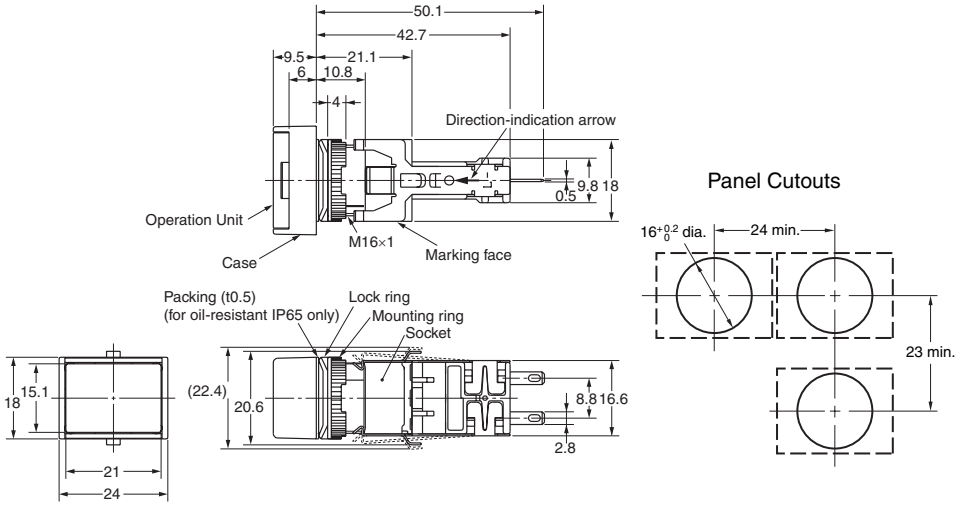
(Unit: mm)

Rectangular

M16□-J□-T1

Voltage-reduction lighting, solder terminals

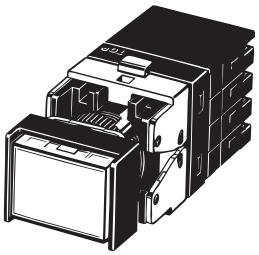


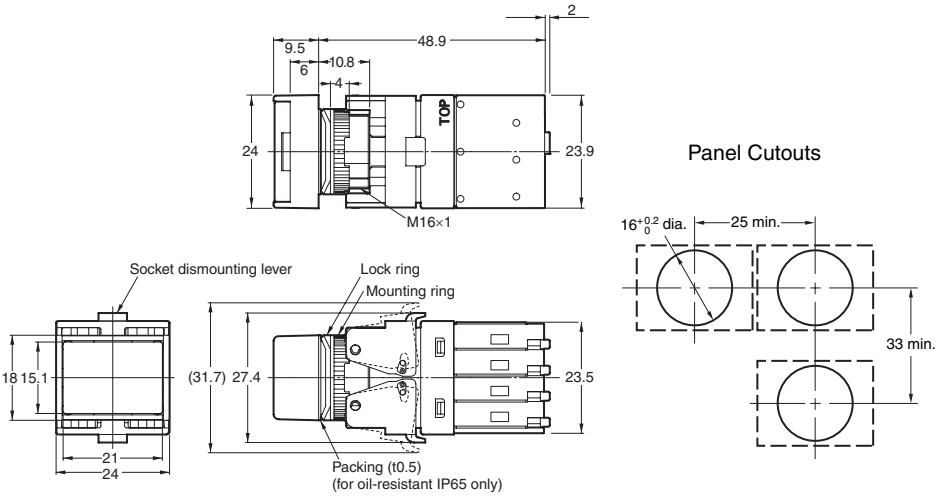


Rectangular

M16□-J□-S

Screw-less Clamp

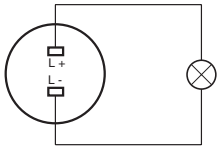
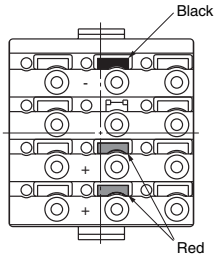
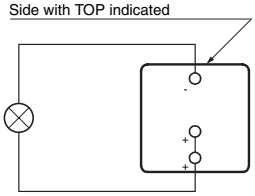
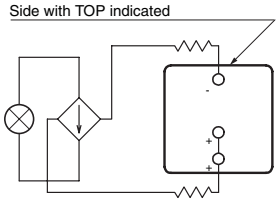




Dimensions

(All units are in millimeters unless otherwise indicated.)

Terminal Arrangement

Solder Terminals	Screw-less Clamp	Voltage-reduction Lighting
(BOTTOM VIEW)  The L+ is not shown on the Socket Unit.	 (BOTTOM VIEW) Side with TOP indicated 	(BOTTOM VIEW) Side with TOP indicated  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.

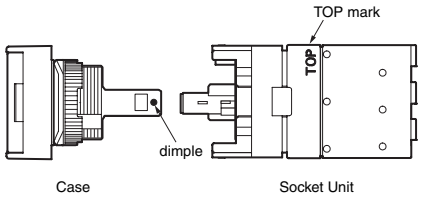
Safety Precautions

Refer to *Safety Precautions for All Pushbutton Switches* 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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