

# A16

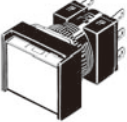
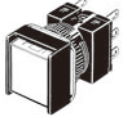

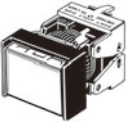


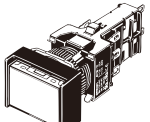
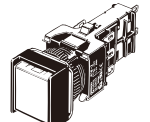

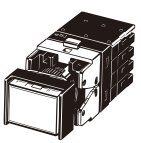
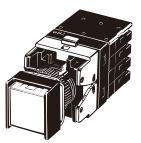
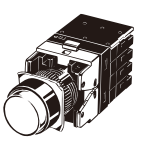


## Separate Construction with Cylindrical 16-dia. Body

- Miniature design of 28.5 mm, the smallest class in the industry.
- Detachable Switch Unit.
- The same contacts can be used for both standard loads and microloads.
- Easy-to-wire terminal arrangement.
- Certified for EN 60947-5-1 and IEC 60947-5-1.



## List of Models

	Model		
	Rectangular	Square	Round
<b>Solder terminals</b>	 A16□-J Series	 A16□-A Series	 A16□-T Series
<b>PCB terminals</b>	 A16□-J Series	 A16□-A Series	 A16□-T Series
<b>Voltage-reduction lighting solder terminals</b>	 A16□-J Series	 A16□-A Series	 A16□-T Series
<b>Screw-less clamp models</b>	 A16□-J Series	 A16□-A Series	 A16□-T Series

## Model Number Structure

**Model Number Legend** ..... The model numbers used to order sets of Units are illustrated below. One set comprises the Pushbutton, Lamp (lighted models only), Case, and Switch. For information on combinations, refer to Ordering Information on pages 3 to 7.

(1) (2) (3) (4) (5) (6) (7)  
**A 1 6** **5** **L** - **J** **R** **M** - **24D** - **2**

### (1) Degree of Protection

Symbol	Protection
No symbol	IP40
5	Oil-resistant IP65

### (2) Lighted/Non-lighted

Symbol	Type
No symbol	Non-lighted
L	Lighted

### (3) Shape of Pushbutton

Symbol	Shape	
J	Rectangular	2-way guard
A	Square	2-way guard
T	Round	Projecting model

### (4) Color of Pushbutton

Symbol	Color
R	Red
Y	Yellow
PY	Pure yellow
G	Green
W	White
A	Blue
PW	Pure white
B	Black (non-lighted models only)

- Color illuminated models are also available (see page 8).
- Order the parts separately.

### (5) Switch Operation

Symbol	Operation
M	Momentary
A	Alternate

- Momentary-operation: Self-resetting
- Alternate-operation: Self-holding

### Colored Illumination

Unlit	Lit
White	Color

The built-in LED is colored.

### (7) Contact Configuration

Symbol	Type	Terminal
1	SPDT	Solder Terminal
2	DPDT	
1P	SPDT	PCB Terminal
2P	DPDT	
2S	DPDT	Screw-less Clamp

- Only DPDT contacts are available with Screw-Less Clamp.
- Consult your OMRON representative concerning pricing and delivery timing for PCB terminals and screw-less clamp connectors.

### (6) Light Source

Symbol	Type	Operating voltage	Rated voltage
No symbol	Non-lighted		
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 to 110 VAC/VDC	100/110 VAC/VDC
T2		200 to 220 VAC/VDC	200/220 VAC/VDC

- Solder terminals are available only with 100-V models.
- The Voltage Reduction Unit is not available for models with PCB terminals.
- "T2" is available only for the Screw-less Clamp type.

## 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 Pushbutton, Lamp (lighted models only), Case, and Switch.

### Solder Terminals

Round Models

IP40



A16□-T

Output	Lighting	Item Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol *1
SPDT	LED without Voltage Reduction Unit	5 VDC	A16L-T□M-5D-1	A16L-T□A-5D-1	R: red, Y: yellow PY: pure yellow G: green, A: blue W: white PW: pure white
		12 VAC/VDC	A16L-T□M-12D-1	A16L-T□A-12D-1	
		24 VAC/VDC	A16L-T□M-24D-1	A16L-T□A-24D-1	
	Incandescent lamp	5 VAC/VDC	A16L-T□M-5-1	A16L-T□A-5-1	R: red, Y: yellow PY: pure yellow G: green, W: white A: blue B: black *2
		12 VAC/VDC	A16L-T□M-12-1	A16L-T□A-12-1	
		24 VAC/VDC	A16L-T□M-24-1	A16L-T□A-24-1	
	Non-lighted		A16-T□M-1	A16-T□A-1	
DPDT	LED without Voltage Reduction Unit	5 VDC	A16L-T□M-5D-2	A16L-T□A-5D-2	R: red, Y: yellow PY: pure yellow G: green, A: blue W: white PW: pure white
		12 VAC/VDC	A16L-T□M-12D-2	A16L-T□A-12D-2	
		24 VAC/VDC	A16L-T□M-24D-2	A16L-T□A-24D-2	
	Incandescent lamp	5 VAC/VDC	A16L-T□M-5-2	A16L-T□A-5-2	R: red, Y: yellow PY: pure yellow G: green, W: white A: blue B: black *2
		12 VAC/VDC	A16L-T□M-12-2	A16L-T□A-12-2	
		24 VAC/VDC	A16L-T□M-24-2	A16L-T□A-24-2	
	Non-lighted		A16-T□M-2	A16-T□A-2	

\*1. Enter the desired color symbol for the Pushbutton in the □.

\*2. Black ("B") Pushbuttons are only available for non-lighted models.



Oil-resistant IP65

Output	Lighting	Item Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol *1
SPDT	LED without Voltage Reduction Unit	5 VDC	A165L-T□M-5D-1	A165L-T□A-5D-1	R: red, Y: yellow PY: pure yellow G: green, A: blue W: white PW: pure white
		12 VAC/VDC	A165L-T□M-12D-1	A165L-T□A-12D-1	
		24 VAC/VDC	A165L-T□M-24D-1	A165L-T□A-24D-1	
	Incandescent lamp	5 VAC/VDC	A165L-T□M-5-1	A165L-T□A-5-1	R: red, Y: yellow PY: pure yellow G: green, W: white A: blue B: black *2
		12 VAC/VDC	A165L-T□M-12-1	A165L-T□A-12-1	
		24 VAC/VDC	A165L-T□M-24-1	A165L-T□A-24-1	
	Non-lighted		A165-T□M-1	A165-T□A-1	
DPDT	LED without Voltage Reduction Unit	5 VDC	A165L-T□M-5D-2	A165L-T□A-5D-2	R: red, Y: yellow PY: pure yellow G: green, A: blue W: white PW: pure white
		12 VAC/VDC	A165L-T□M-12D-2	A165L-T□A-12D-2	
		24 VAC/VDC	A165L-T□M-24D-2	A165L-T□A-24D-2	
	Incandescent lamp	5 VAC/VDC	A165L-T□M-5-2	A165L-T□A-5-2	R: red, Y: yellow PY: pure yellow G: green, W: white A: blue B: black *2
		12 VAC/VDC	A165L-T□M-12-2	A165L-T□A-12-2	
		24 VAC/VDC	A165L-T□M-24-2	A165L-T□A-24-2	
	Non-lighted		A165-T□M-2	A165-T□A-2	

\*1. Enter the desired color symbol for the Pushbutton in the □.

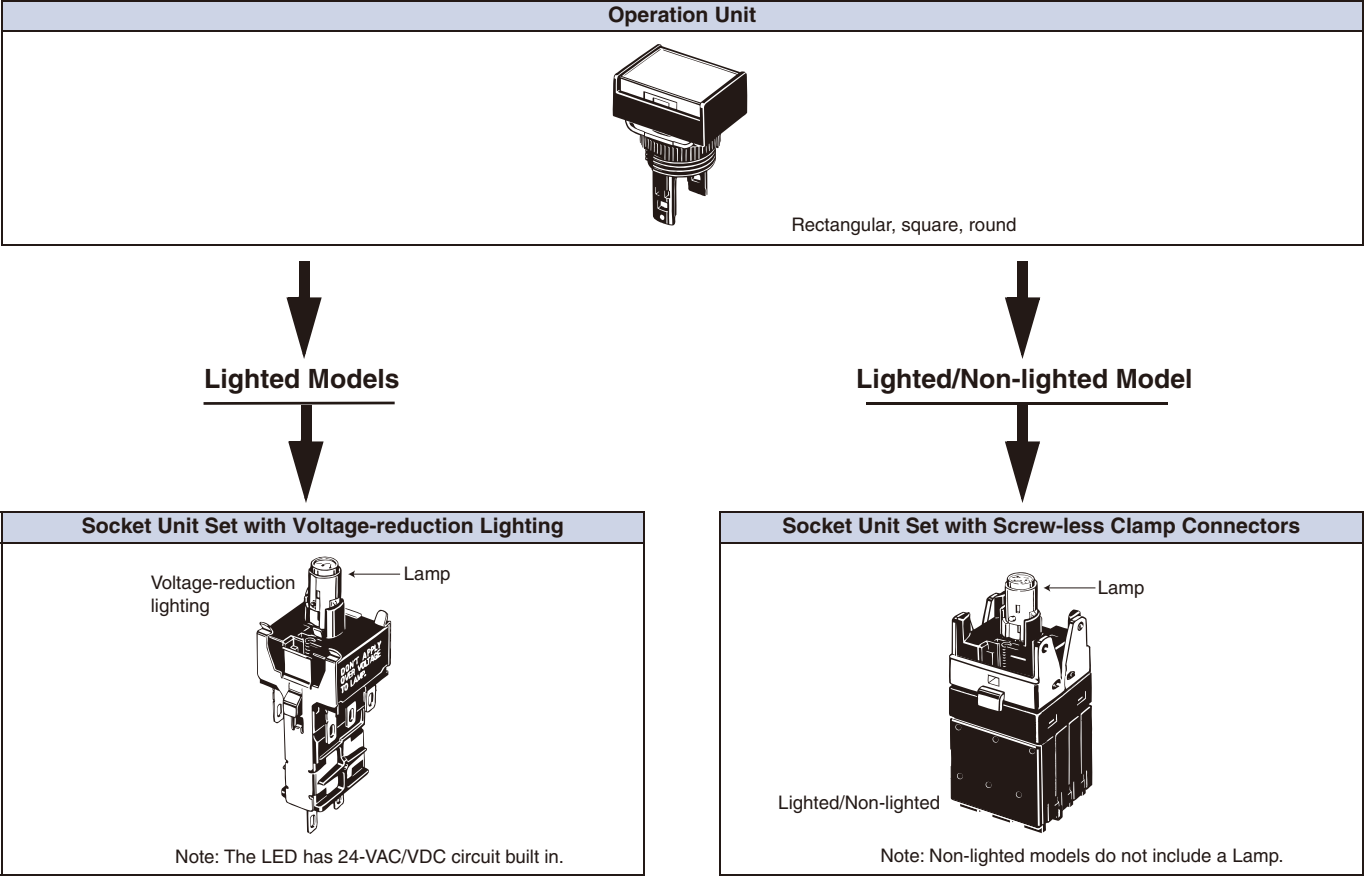
\*2. Black ("B") Pushbuttons are only available for non-lighted models.

Individual models: Refer to pages 9 to 13.  
(The Pushbutton, Lamp, Case, and Switch can be ordered separately.)

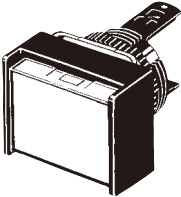
■ Ratings: Refer to page 16. ■ Characteristics: Refer to page 16.  
■ Accessories: Refer to page 15.

Ordering Information

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



Unit Sets ..... Sets that combine an Operation Unit and a Case.

Appearance		Classification			Model
	IP40	Momentary operation	Rectangular (2-way guard)		A16-J□M
			Square (2-way guard)		A16-A□M
			Round (projected)		A16-T□M
		Alternate operation	Rectangular (2-way guard)		A16-J□A
			Square (2-way guard)		A16-A□A
			Round (projected)		A16-T□A
	Oil-resistant IP65	Momentary operation	Rectangular (2-way guard)		A165-J□M
			Square (2-way guard)		A165-A□M
			Round (projected)		A165-T□M
		Alternate operation	Rectangular (2-way guard)		A165-J□A
			Square (2-way guard)		A165-A□A
			Round (projected)		A165-T□A

Insert one of the following symbols into the box (□).

Symbol	Color	Remarks
R	Red	LED indicator, incandescent lamp, or non-lighted
Y	Yellow	
PY	Pure yellow	
A	Blue	
W	White	
GY	Green	LED only
G	Green	Incandescent lamp or non-lighted
B	Black	Non-lighted only

## Specifications

### Approved Standard Ratings UL, cUL (File No. E41515)

5 A at 125 VAC, 3 A at 250 VAC (general use)
3 A at 30 VDC (resistive)

### Ratings

#### Contacts

Rated voltage	Resistive load
125 VAC	5 A
250 VAC	3 A
30 VDC	3 A

Minimum applicable load: 1 mA at 5 VDC

Rated values are obtained from tests conducted under the following conditions.

1. Load: Resistive load
2. Mounting conditions: No vibration and no shock
3. Temperature: 20 ±2 °C
4. Operating frequency: 20 operations/min

#### Contact Form

Name	Contact
DPDT	

## Characteristics

### Socket Unit

Item	Type	Pushbutton Switch
Allowable operating frequency	Mechanical	Momentary operation: 120 operations/minute max. Alternate operation: 60 operations/minute max. *1
	Electrical	20 operations/minute max. *1
Insulation resistance		100 MΩ min. (at 500 VDC)
Dielectric strength	Between terminals of same polarity	1,000 VAC, 50/60 Hz for 1 minute
	Between terminals of different polarity	2,000 VAC, 50/60 Hz for 1 minute
	Between each terminal and ground	2,000 VAC, 50/60 Hz for 1 minute
	Between lamp terminals	1,000 VAC, 50/60 Hz for 1 minute *2
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Destruction	500 m/s <sup>2</sup>
	Malfunction	150 m/s <sup>2</sup> max. (malfunction within 1 ms)
Durability	Mechanical	Momentary operation: 2,000,000 operations min. Alternate operation: 200,000 operations min. *1
	Electrical	100,000 operations min. *1
Electric shock protection class		Class II
PTI (tracking characteristic)		175
Degree of contamination		3 (IEC947-5-1)
Weight		Approx. 10 g (in the case of a lighted DPDT switch with solder terminals)
Degree of protection		IP40: A16, Oil-resistant IP65: A165 *3
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)

\*1. Set and reset constitute one operation.

\*2. With LED and incandescent lamp not mounted.

\*3. Degree of protection from the front of the panel.

### Operating Characteristics

Characteristics	Type	Pushbutton Switch	
		IP40	Oil-resistant IP65
Operating force (OF) max.		4.41 N	4.91 N
Releasing force (RF) min.		0.29 N	
Total travel (TT)		Approx. 3 mm	
Pretravel (PT) max.		2.5 mm	
Lock travel alternate (LTA) min. *		0.5 mm	

\* Alternate operation models only.

### EN60947-5-1 (Low Voltage Directive)

3 A at 250 VAC (AC12), 3 A at 30 VDC (DC12)

### Super-bright LED

Rated voltage	Rated current	Operating voltage	Internal limiting resistor
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

### Voltage-reduction Unit (LED Lamp)

Rated voltage	Operating voltage	Applicable lamp
110 VAC/VDC	100/110 VAC/VDC (90 to 121 V)	A16-24DS□ LED Lamp
220 VAC/VDC	200/220 VAC/VDC (180 to 242 V)	

### Screw-less Clamp

Item	Screw-Less Clamp				
Recommended wire size	0.5 mm <sup>2</sup> twisted wire or 0.8 mm-dia. solid wire				
Usable wires and tensile strength	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>
	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 ±1mm				
Compliant standards	JIS C 2811 Terminal Blocks for Industrial Use				

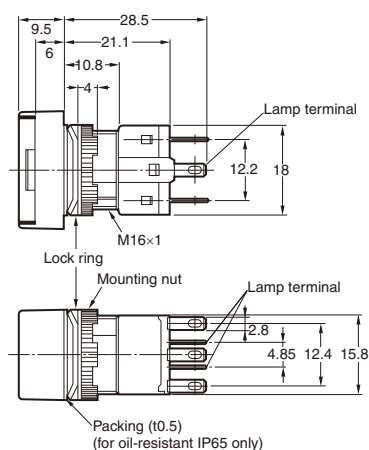
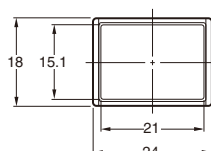
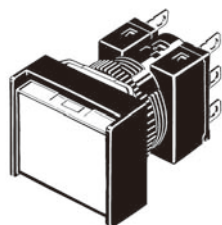
## Dimensions

- The lamp terminal is also provided with non-lighted models.
- Solder terminals and tab terminals (#110) can be both used with Lighted and Non-lighted Pushbutton Switches.

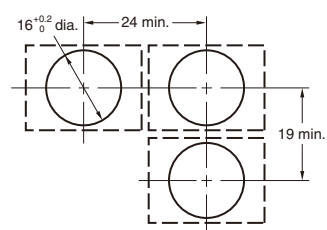
### Rectangular

#### A16□-J

#### Solder terminals (tab terminals #110)



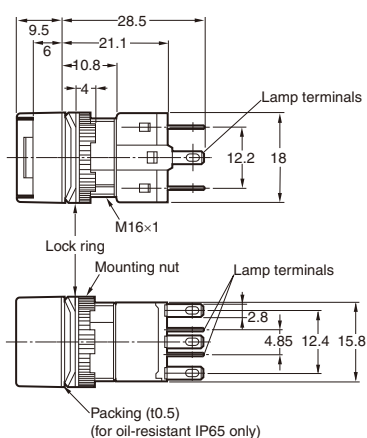
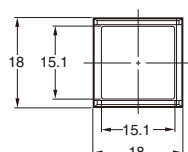
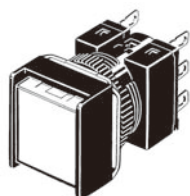
- See page 21 for panel cutouts



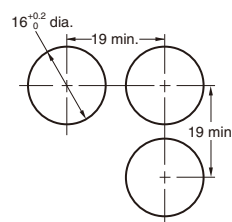
### Square

#### A16□-A

#### Solder terminals (tab terminals #110)



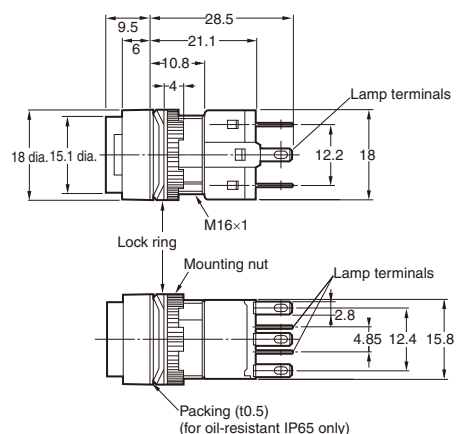
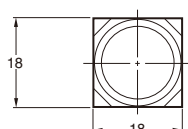
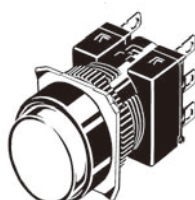
- See page 21 for panel cutouts



### Round

#### A16□-T

#### Solder terminals (tab terminals #110)



- See page 21 for panel cutouts

