# Pushbutton Switch (Detachable) (Lighted/Non-Lighted) (Cylindrical 16-dia.)

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.

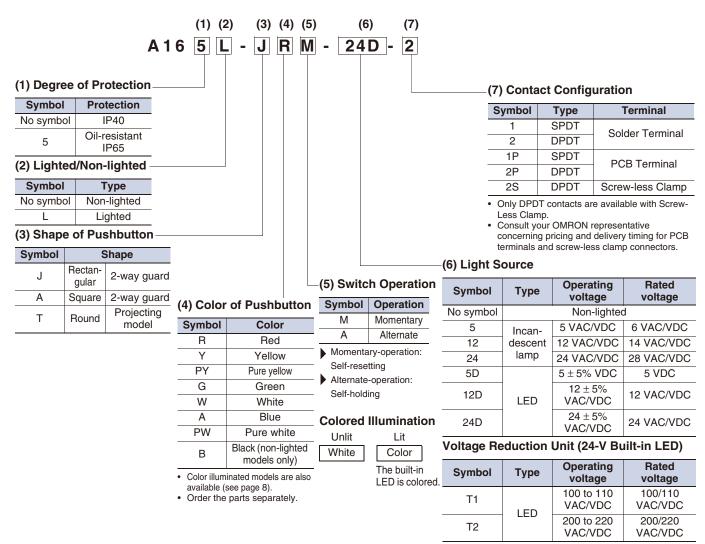


	Model				
	Rectangular	Square	Round		
Solder terminals	A16-J Series	A16-A Series	A16-T Series		
PCB terminals	A16-J Series	A16-A Series	A16-T Series		
Voltage- reduction lighting solder terminals	A16-J Series	A16-A Series	A16-T Series		
Screw-less clamp models	A16-J Series	A16-A Series	A16-T Series		

# List of Models

## **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.



• 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 Terminal Models**

Square Models

IP40



Output	Lighting	Item Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol *1
	LED without	5 VDC	A16L-A M-5D-1	A16L-A□A-5D-1	R: red, Y: yellow
	Voltage Reduction	12 VAC/VDC	A16L-A□M-12D-1	A16L-A□A-12D-1	PY: pure yellow G: green, A: blue
	Unit	24 VAC/VDC	A16L-A□M-24D-1	A16L-A□A-24D-1	W: white PW:pure white
SPDT		5 VAC/VDC	A16L-A□M-5-1	A16L-A□A-5-1	R: red, Y: yellow
	Incandescent Iamp	12 VAC/VDC	A16L-A_M-12-1	A16L-A□A-12-1	PY: pure yellow G: green, W: white A: blue
		24 VAC/VDC	A16L-A_M-24-1	A16L-A□A-24-1	
	Non-lighted		A16-A□M-1	A16-A□A-1	B: black *2
	LED without	5 VDC	A16L-A□M-5D-2	A16L-A□A-5D-2	R: red, Y: yellow PY: pure yellow G: green, A: blue W: white
	Voltage Reduction	12 VAC/VDC	A16L-A□M-12D-2	A16L-A_A-12D-2	
	Unit	24 VAC/VDC	A16L-A□M-24D-2	A16L-A□A-24D-2	PW:pure white
DPDT		5 VAC/VDC	A16L-A_M-5-2	A16L-A□A-5-2	R: red, Y: yellow
	Incandescent lamp	12 VAC/VDC	A16L-A_M-12-2	A16L-A□A-12-2	PY: pure yellow
	ianip	24 VAC/VDC	A16L-A_M-24-2	A16L-A□A-24-2	G: green, W: white A: blue
	Non-lighted		A16-A□M-2	A16-A□A-2	B: black *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
	LED without	5 VDC	A165L-A□M-5D-1	A165L-A□A-5D-1	R: red, Y: yellow
	Voltage Reduction	12 VAC/VDC	A165L-A M-12D-1	A165L-A_A-12D-1	PY: pure yellow G: green, A: blue W: white
	Unit	24 VAC/VDC	A165L-A M-24D-1	A165L-A□A-24D-1	PW:pure white
SPDT		5 VAC/VDC	A165L-A□M-5-1	A165L-A□A-5-1	R: red, Y: yellow
	Incandescent Iamp	12 VAC/VDC	A165L-A_M-12-1	A165L-A_A-12-1	PY: pure yellow G: green, W: white
		24 VAC/VDC	A165L-A_M-24-1	A165L-A_A-24-1	A: blue
	Non-lighted		A165-A□M-1	A165-A□A-1	B: black *2
	LED without	5 VDC	A165L-A□M-5D-2	A165L-A□A-5D-2	R: red, Y: yellow PY: pure yellow
	Voltage Reduction	12 VAC/VDC	A165L-A□M-12D-2	A165L-A_A-12D-2	G: green, A: blue W: white
DPDT	Unit	24 VAC/VDC	A165L-A□M-24D-2	A165L-A□A-24D-2	PW:pure white
DPDT		5 VAC/VDC	A165L-A□M-5-2	A165L-A□A-5-2	R: red, Y: yellow
	Incandescent lamp	12 VAC/VDC	A165L-A□M-12-2	A165L-A□A-12-2	PY: pure yellow G: green, W: white
		24 VAC/VDC	A165L-A□M-24-2	A165L-A□A-24-2	A: blue
	Non-lighted		A165-A□M-2	A165-A□A-2	B: black *2

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

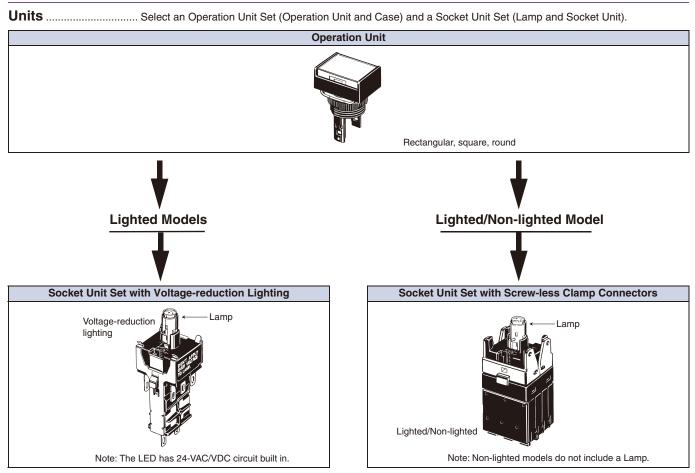
\*2. Black ("B") Pushbuttons are only available for non-lighted models.

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**



Appearance		C	lassification	Model
		Management	Rectangular (2-way guard)	A16-J M
		Momentary operation	Sollare (2-way ollard)	A16-A M
•	IP40	operation	Round (projected)	A16-T
	1F40		Rectangular (2-way guard)	A16-J□A
	Alternate operation	Alternate operation	Square (2-way guard)	A16-A A
			Round (projected)	A16-T□A
		Management	Rectangular (2-way guard)	A165-J_M
		Momentary operation	Square (2-way guard)	A165-A M
	Oil-resistant IP65	operation	Round (projected)	A165-T M
(F	OII-resistant IP65		Rectangular (2-way guard)	A165-J A
		Alternate operation	Square (2-way guard)	A165-A A
			Round (projected)	A165-T⊡A

Insert one of the following symbols into the box ( $\Box$ ).

	0,	
Symbol	Color	Remarks
R	Red	
Y	Yellow	
PY	Pure yellow	<ul> <li>LED indicator, incandescent</li> <li>lamp, or non-lighted</li> </ul>
А	Blue	lamp, or nor lighted
W	White	
GY	Green	LED only
G	Green	Incandescent lamp or non-lighted
В	Black Non-lighted only	

#### **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	COM NC

# **Characteristics**

#### Socket Unit

Item	Туре	Pushbutton Switch	
Allowable	Mechanical	Momentary operation: 120 operations/minute max.	
operating	Mechanical	Alternate operation: 60 operations/minute max.*1	
frequency	Electrical	20 operations/minute max. *1	
Insulation resistance		100 MΩ min. (at 500 VDC)	
	Between terminals of same polarity	1,000 VAC, 50/60 Hz for 1 minute	
Dielectric	Between terminals of different polarity	2,000 VAC, 50/60 Hz for 1 minute	
strength	Between each ter- minal and ground	2,000 VAC, 50/60 Hz for 1 minute	
	Between lamp ter- minals	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	Destruction	500 m/s <sup>2</sup>	
resistance	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 sho	ock protection class	Class II	
PTI (trackin	g characteristic)	175	
Degree of c	ontamination	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 op	erating temperature	-10 °C to 55 °C (with no icing or condensation)	
Ambient op	erating humidity	35% to 85%RH	
Ambient sto	orage 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**

Туре	Pushbutton Switch	
Characteristics	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		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

#### Voltage-reduction Unit (LED Lamp)

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

#### 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.

