

A165S/W

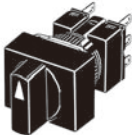
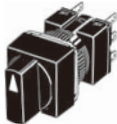
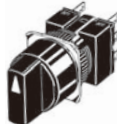
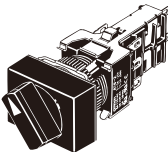
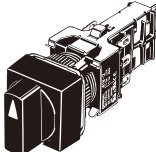
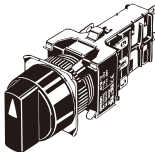
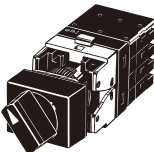
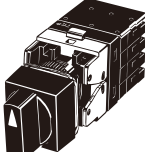
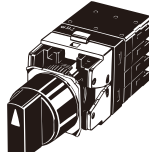
Separate Construction with Cylindrical 16-dia. Body



- Same separate construction as the A16-series
Pushbuttons with Miniature Design of 28.5 mm
- The same contacts can be used for both standard loads and microloads.
- Oil-resistant IP65 models
- Conforms to EN60947-5-1, IEC947-5-1



List of Models

	Model		
	Rectangular	Square	Round
Solder terminals	 A165□-J Series	 A165□-A Series	 A165□-T Series
Voltage-reduction lighting	 A165□-J Series	 A165□-A Series	 A165□-T Series
Screw-less clamp connector	 A165□-J Series	 A165□-A Series	 A165□-T Series

Model Number Structure

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

(1) (2) (3) (4) (5) (6)
A 1 6 5 W - A 2 A R - 2 4 D - 1

(1) Lighted/ Non-lighted

Symbol	Type
S	Non-lighted
W	Lighted

(2) Shape of Selector

Symbol	Shape
J	Rectangular
A	Square
T	Round

(3) Number of Notches/ Resetting Method

Symbol	No. of notches	Reset method
2M	2 notches	Manual ↓
2A		Automatic ◇
3M	3 notches	Manual ↓
3A		Automatic ◇

(4) Color of Selector

Symbol	Color
No symbol	Black (non-lighted models only)
R	Red
G	Green
Y	Yellow

(6) Contact Configuration

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

Note: 1. Only DPDT contacts are available with 3-notch models and Screw-less Clamp models.
2. PCB terminals are available only with 2-notch models.

(5) Light Source

Symbol	Type
No symbol	Non-lighted
24D	24 V-LED

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

Note: 1. Solder terminals are only available with 100-V models.
2. The Voltage Reduction Unit is not available for models with PCB terminals.
3. "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 Selector, Lamp (lighted models only), and Switch.

Solder Terminals

Rectangular



A165□-J

Oil-resistant IP65

No. of notches	Output	Reset method	Lighting method	Model
2 notches	SPDT	Manual	LED	A165W-J2M□-24D-1
			Non-lighted	A165S-J2M-1
		Automatic	LED	A165W-J2A□-24D-1
			Non-lighted	A165S-J2A-1
	DPDT	Manual	LED	A165W-J2M□-24D-2
			Non-lighted	A165S-J2M-2
Automatic		LED	A165W-J2A□-24D-2	
		Non-lighted	A165S-J2A-2	
3 notches	DPDT	Manual	LED	A165W-J3M□-24D-2
			Non-lighted	A165S-J3M-2

Note: Enter the desired color symbol for the Selector in □: R (red); Y (yellow); G (green). The Selector for non-lighted models is black.

Square



A165□-A

Oil-resistant IP65

No. of notches	Output	Reset method	Lighting method	Model
2 notches	SPDT	Manual	LED	A165W-A2M□-24D-1
			Non-lighted	A165S-A2M-1
		Automatic	LED	A165W-A2A□-24D-1
			Non-lighted	A165S-A2A-1
	DPDT	Manual	LED	A165W-A2M□-24D-2
			Non-lighted	A165S-A2M-2
Automatic		LED	A165W-A2A□-24D-2	
		Non-lighted	A165S-A2A-2	
3 notches	DPDT	Manual	LED	A165W-A3M□-24D-2
			Non-lighted	A165S-A3M-2

Note: Enter the desired color symbol for the Selector in □: R (red); Y (yellow); G (green). The Selector for non-lighted models is black.

Round



A165□-T

Oil-resistant IP65










No. of notches	Output	Reset method	Lighting method	Model
2 notches	SPDT	Manual	LED	A165W-T2M□-24D-1
			Non-lighted	A165S-T2M-1
		Automatic	LED	A165W-T2A□-24D-1
			Non-lighted	A165S-T2A-1
	DPDT	Manual	LED	A165W-T2M□-24D-2
			Non-lighted	A165S-T2M-2
Automatic		LED	A165W-T2A□-24D-2	
		Non-lighted	A165S-T2A-2	
3 notches	DPDT	Manual	LED	A165W-T3M□-24D-2
			Non-lighted	A165S-T3M-2

Note: Enter the desired color symbol for the Selector in □: R (red); Y (yellow); G (green). The Selector for non-lighted models is black.

Ordering Information

Ordering Individually Selectors, Lamps, and Switches (Sockets) can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

Selectors (Oil-resistant IP65 Models Only)

Appearance	Number of notches	Reset method	Lighting method	Model	Selector color symbol
Rectangular (A165□-J) 	2 notches	Manual	LED	A165W-J2M□	Enter the desired color symbol for the Selector in □. R (red), Y (yellow), G (green)
		Automatic 	Non-lighted	A165S-J2M	
	3 notches	Manual	LED	A165W-J2A□	
			Non-lighted	A165S-J2A	
		Fully automatic 	LED	A165W-J3M□	
			Non-lighted	A165S-J3A	
Square (A165□-A) 	2 notches	Manual	LED	A165W-A2M□	Enter the desired color symbol for the Selector in □. R (red), Y (yellow), G (green)
		Automatic 	Non-lighted	A165S-A2M	
	3 notches	Manual	LED	A165W-A2A□	
			Non-lighted	A165S-A2A	
		Fully automatic 	LED	A165W-A3M□	
			Non-lighted	A165S-A3M	
Round (A165□-T) 	2 notches	Manual	LED	A165W-T2M□	Enter the desired color symbol for the Selector in □. R (red), Y (yellow), G (green)
		Automatic 	Non-lighted	A165S-T2M	
	3 notches	Manual	LED	A165W-T2A□	
			Non-lighted	A165S-T2A	
		Fully automatic 	LED	A165W-T3M□	
			Non-lighted	A165S-T3M	
		LED	A165W-T3A□		
		Non-lighted	A165S-T3A		

Note: The selector for non-lighted models is black.

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)

EN60947-5-1 (Low Voltage Directive)

3 A at 250 VAC
3 A at 30 VDC

Ratings

Switch Ratings

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 times/min


Characteristics

Socket Unit

Item	Type	Knob-type Selector Switch
Allowable operating frequency	Mechanical	20 operations/minute max.
	Electrical	10 operations/minute max.
Insulation resistance		100 MΩ min. (at 500 VDC)
Dielectric strength	Between terminals of same polarity	1,000 VAC, 50/60 Hz for 1 min
	Between terminals of different polarity	2,000 VAC, 50/60 Hz for 1 min
	Between each terminal and ground	2,000 VAC, 50/60 Hz for 1 min
	Between lamp terminals	1,000 VAC, 50/60 Hz for 1 min*
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Destruction	500 m/s ²
	Malfunction	150 m/s ² max. (malfunction within 1 ms)
Durability	Mechanical	250,000 operations min.
	Electrical	100,000 operations min.
Electric shock protection class		Class II
PTI (tracking characteristic)		175
Degree of contamination		3 (IEC60947-5-1)
Weight		Approx. 13 g (in the case of a lighted DPDT switch)
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)

* With LED not mounted.
(Perform testing with the LED not mounted.)

Contact Form

Name	Contact form
SPDT	

Super-bright LED

Rated voltage	Rated current	Operating voltage	Internal limiting resistor
5 VDC	8 mA	5 VDC±5%	Red, yellow : 300 Ω Green : 160 Ω
12 VAC/VDC		12 VAC/VDC±5%	Red, yellow : 1 kΩ Green : 910 Ω
24 VAC/VDC		24 VAC/VDC±5%	2.4 kΩ

Screw-less Clamp

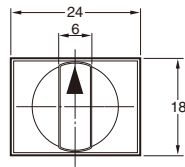
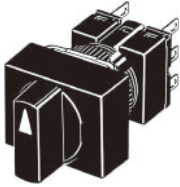
Item	Type	Screw-less Clamp			
Recommended wire size		0.5 mm ² twisted wire or 0.8 mm-dia. solid wire			
Usable wires and tensile strength	Twisted wire	0.3 mm ²	0.5 mm ²	0.75 mm ²	1.25 mm ²
	Solid wire	0.5 mm dia.	0.8 mm dia.	1.0 mm dia.	---
	Tensile strength	10 N	20 N	30 N	40 N
Length of exposed wire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

Operating Characteristics

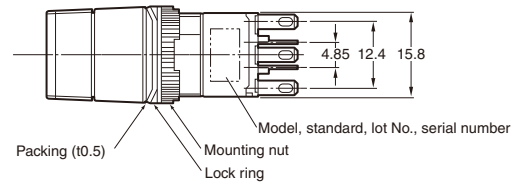
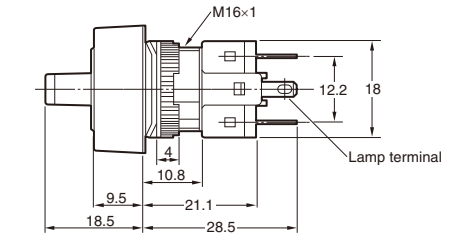
Characteristics	Type	Knob-type Selector Switch	
		2 notches	3 notches
Operating force (OF) max.		0.1 N-m	
Set position (SP)		90±5°	45° ⁺¹⁰ ₀

Dimensions

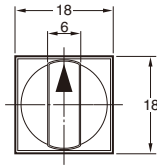
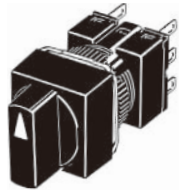
Rectangular A165□-J Solder terminals (tab terminals #110)



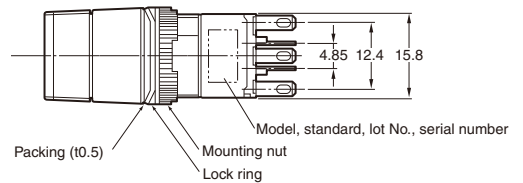
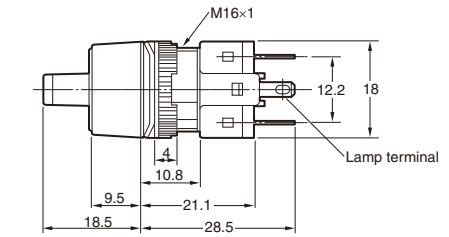
Note: See page 12 for panel cutouts.



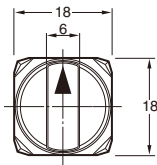
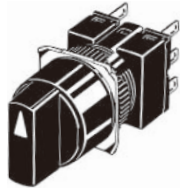
Square A165□-A Solder terminals (tab terminals #110)



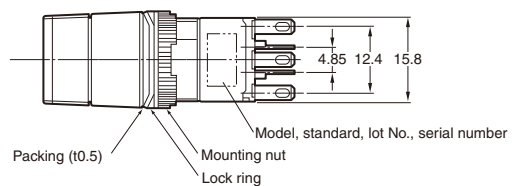
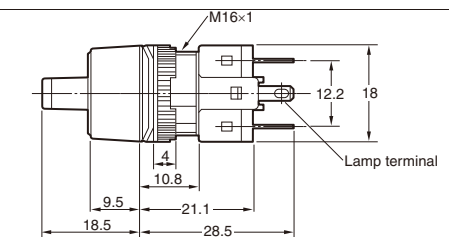
Note: See page 12 for panel cutouts.



Round A165□-T Solder terminals (tab terminals #110)

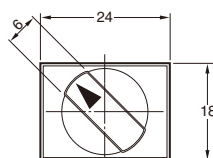
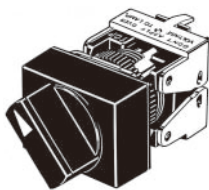


Note: See page 12 for panel cutouts.

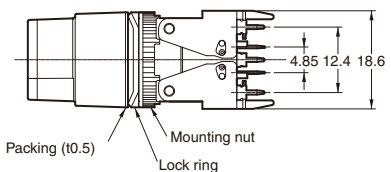
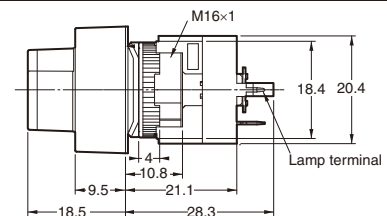


Rectangular A165□-J PCB terminals

The following diagrams show the rectangular model as a representative example. The lamp terminal is also provided with non-lighted models.



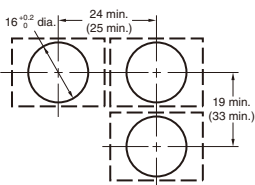
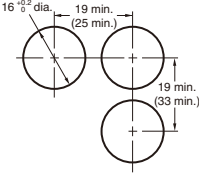
Note: See page 12 for panel cutouts.



Dimensions

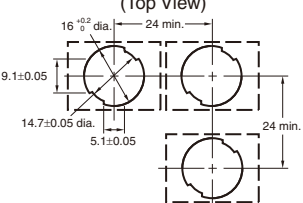
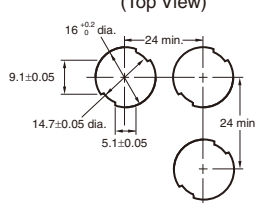
Panel Cutouts

Models with Solder Terminals and Models with Screw-less Clamp Connectors

Rectangular A165□-J	Square A165□-A, Round A165□-T
<p>(Top View)</p> 	<p>(Top View)</p> 

- Note: 1. Make sure the thickness of the mounting panel is 0.5 to 3.2 mm.
 2. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.
 3. Figures in parentheses are for screw-less clamp connectors.

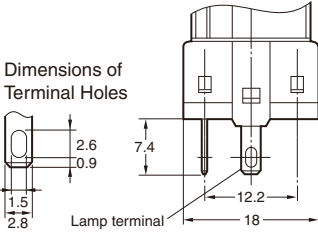
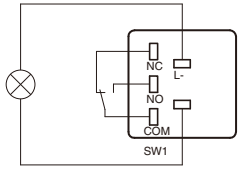
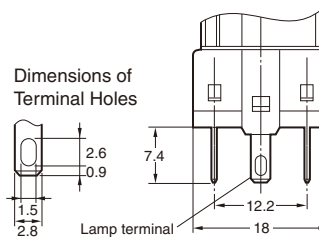
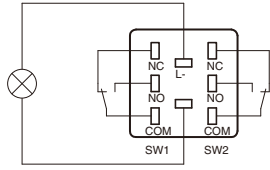
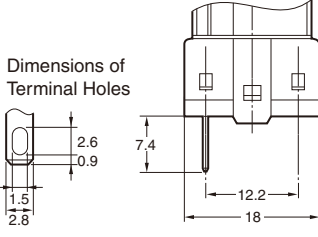
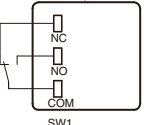
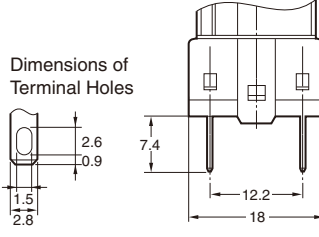
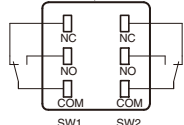
Models with PCB Terminals

Rectangular A165□-J	Square A165□-A, Round A165□-T
<p>(Top View)</p> 	<p>(Top View)</p> 

- Note: 1. Ensure that the variation in the distance between the centers of neighboring mounting holes is less than ± 0.1 mm.
 2. Make sure the thickness of the mounting panel is 0.5 to 3.2 mm. If, however, a Switch Guard or Dust Cover is used, the thickness of the mounting panel must be 0.5 to 2 mm.
 3. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.

Terminal Arrangement

Models with Solder Terminals without Reduced-voltage Lighting (Lamp terminals are not provided with the Non-lighted Knob-type Selector Switches and Key-type Selector Switches.)

Lighted SPDT Switches	Lighted DPDT Switches
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Dimensions of Terminal Holes</p>  <p>Lamp terminal</p> </div> <div style="width: 50%;"> <p>Terminal Arrangement (Bottom View)</p>  <p>Note: The L+ is not shown on the Switch.</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Dimensions of Terminal Holes</p>  <p>Lamp terminal</p> </div> <div style="width: 50%;"> <p>Terminal Arrangement (Bottom View)</p>  <p>Note: The L+ is not shown on the Switch.</p> </div> </div>
Non-lighted SPDT Switches	Non-lighted DPDT Switches
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Dimensions of Terminal Holes</p>  </div> <div style="width: 50%;"> <p>Terminal Arrangement (Bottom View)</p> <p>Side with TOP indicated</p>  </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Dimensions of Terminal Holes</p>  </div> <div style="width: 50%;"> <p>Terminal Arrangement (Bottom View)</p> <p>Side with TOP indicated</p>  </div> </div>