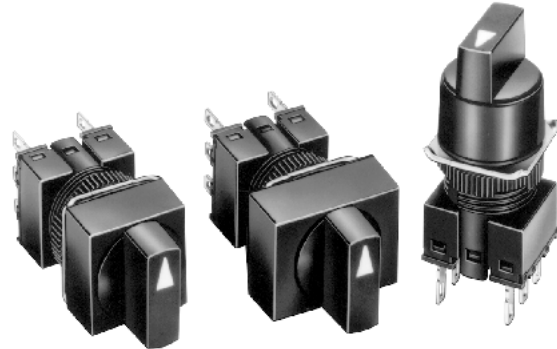


Knob-Type Selector Switch

A165S/W

Mounting Aperture of 16 mm

- 2-piece construction requires no tools
- Oil-resistant IP65 models
- Short mounting depth, less than 28.5 mm below panel
- Wide range of switching capacity from general to microload
- Illuminated and non-illuminated models
- 2 and 3-position models
- Maintained and spring return reset
- UL and CSA approved, VDE pending
- Conforms to EN60947-5-1, IEC947-5-1



Ordering Information

■ CONSTRUCTION

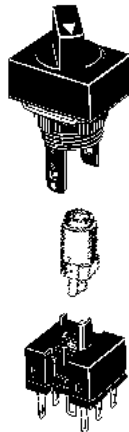
Flange Shape

Protective Case and Terminal Type

- **Protective Structure**
Oil-resistant IP65
- **Terminal Type**
Solder terminals
(tab terminals #110)

Lamp

- LED



Available Colors

- For LED
Red, green, yellow

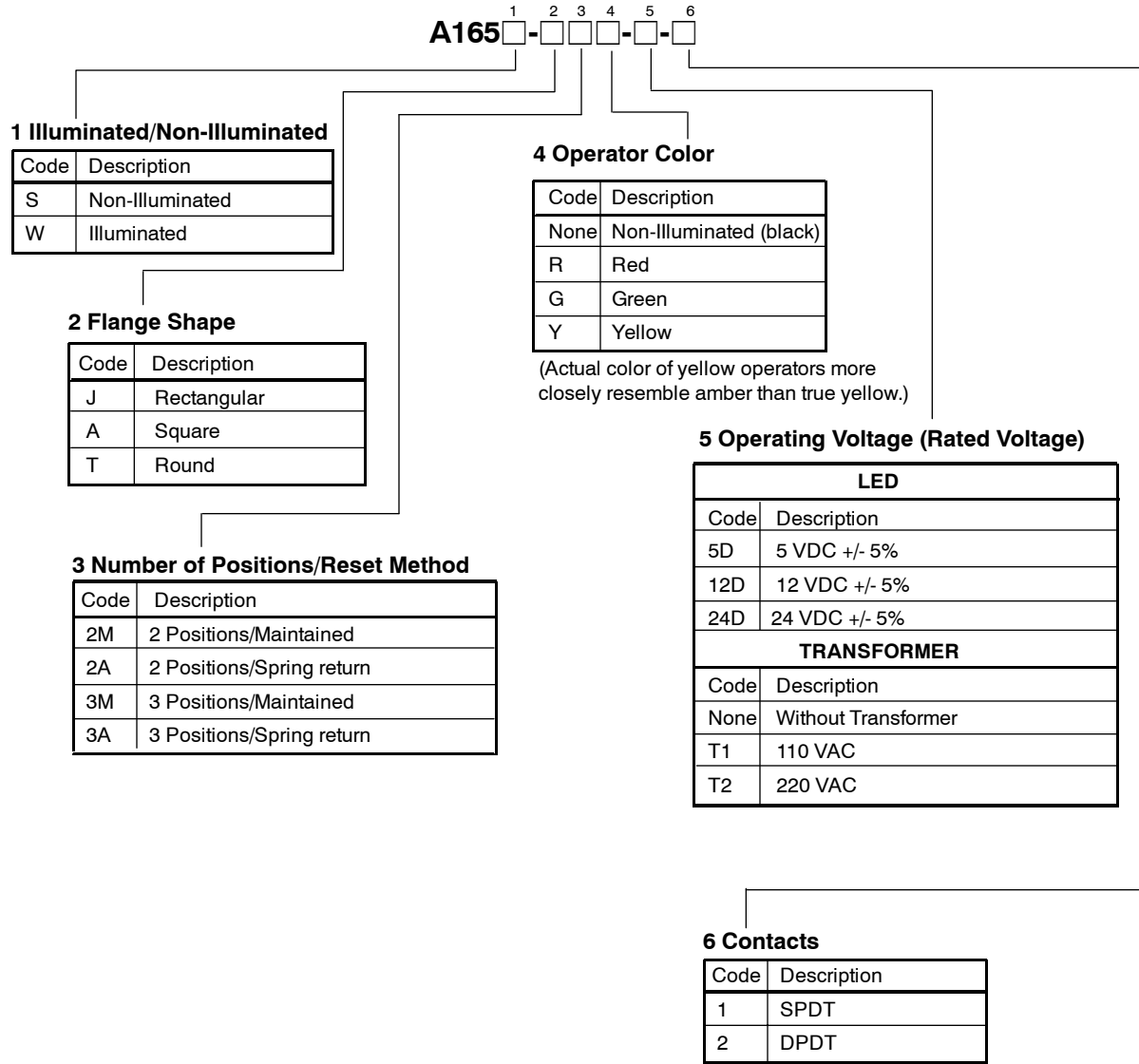
Number of Positions and Reset Method

- **2 Positions**
Maintained
Spring return
- **3 Positions**
Maintained
Spring return

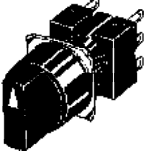
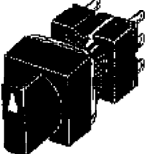
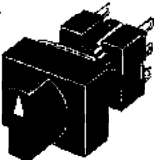
Switch Unit Specifications

- **General-purpose Loads**
125 VAC: 5 A
250 VAC: 3 A
30 VDC 3 A
Minimum applicable load: 1 mA at 5 VDC

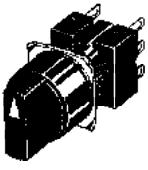
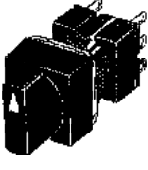

■ PART NUMBER LEGEND A165 SELECTOR SWITCH (COMPLETE ASSEMBLY)



■ PART NUMBERS: A165S ASSEMBLED NON-ILLUMINATED KNOB-TYPE SELECTOR SWITCH
(COMPLETE ASSEMBLY)

Shape	Number of positions	Contact	Reset method	Part number
Round 	2 positions	SPDT	Maintained	A165S-T2M-1
			Spring return (right)	A165S-T2A-1
	3 positions	DPDT	Maintained	A165S-T2M-2
			Spring return (right)	A165S-T2A-2
			Maintained	A165S-T3M-2
			Spring return (both)	A165S-T3A-2
Square 	2 positions	SPDT	Maintained	A165S-A2M-1
			Spring return (right)	A165S-A2A-1
	3 positions	DPDT	Maintained	A165S-A2M-2
			Spring return (right)	A165S-A2A-2
			Maintained	A165S-A3M-2
			Spring return (both)	A165S-A3A-2
Rectangular 	2 positions	SPDT	Maintained	A165S-J2M-1
			Spring return (right)	A165S-J2A-1
	3 positions	DPDT	Maintained	A165S-J2M-2
			Spring return (right)	A165S-J2A-2
			Maintained	A165S-J3M-2
			Spring return (both)	A165S-J3A-2

■ A165W ILLUMINATED (2 POSITION) KNOB-TYPE SELECTOR SWITCH (COMPLETE ASSEMBLY)

Description				Part number		
Appearance	Type	Rated voltage	Contacts	Maintained	Spring return from right	
Round 	Full voltage LED (DC)	5 VDC	SPDT	A165W-T2M□-5D-1	A165W-T2A□-5D-1	
		12 VDC		A165W-T2M□-12D-1	A165W-T2A□-12D-1	
		24 VDC		A165W-T2M□-24D-1	A165W-T2A□-24D-1	
	Transformer 24 V Secondary	110 VAC		A165W-T2M□-T1-1	A165W-T2A□-T1-1	
		220 VAC		A165W-T2M□-T2-1	A165W-T2A□-T2-1	
		Full voltage LED (DC)		5 VDC	DPDT	A165W-T2M□-5D-2
	12 VDC		A165W-T2M□-12D-2	A165W-T2A□-12D-2		
	24 VDC		A165W-T2M□-24D-2	A165W-T2A□-24D-2		
	Transformer 24 V Secondary	110 VAC	A165W-T2M□-T1-2	A165W-T2A□-T1-2		
		220 VAC	A165W-T2M□-T2-2	A165W-T2A□-T2-2		
		Square 	Full voltage LED (DC)	5 VDC		SPDT
	12 VDC			A165W-A2M□-12D-1	A165W-A2A□-12D-1	
24 VDC	A165W-A2M□-24D-1			A165W-A2A□-24D-1		
Transformer 24 V Secondary	110 VAC		A165W-A2M□-T1-1	A165W-A2A□-T1-1		
	220 VAC		A165W-A2M□-T2-1	A165W-A2A□-T2-1		
	Full voltage LED (DC)		5 VDC	DPDT	A165W-A2M□-5D-2	
12 VDC			A165W-A2M□-12D-2		A165W-A2A□-12D-2	
24 VDC			A165W-A2M□-24D-2		A165W-A2A□-24D-2	
Transformer 24 V Secondary	110 VAC		A165W-A2M□-T1-2		A165W-A2A□-T1-2	
	220 VAC		A165W-A2M□-T2-2		A165W-A2A□-T2-2	
	Rectangular 		Full voltage LED (DC)		5 VDC	SPDT
12 VDC				A165W-J2M□-12D-1	A165W-J2A□-12D-1	
24 VDC		A165W-J2M□-24D-1		A165W-J2A□-24D-1		
Transformer 24 V Secondary		110 VAC	A165W-J2M□-T1-1	A165W-J2A□-T1-1		
		220 VAC	A165W-J2M□-T2-1	A165W-J2A□-T2-1		
		Full voltage LED (DC)	5 VDC	DPDT	A165W-J2M□-5D-2	
12 VDC			A165W-J2M□-12D-2		A165W-J2A□-12D-2	
24 VDC			A165W-J2M□-24D-2		A165W-J2A□-24D-2	
Transformer 24 V Secondary		110 VAC	A165W-J2M□-T1-2		A165W-J2A□-T1-2	
		220 VAC	A165W-J2M□-T2-2		A165W-J2A□-T2-2	

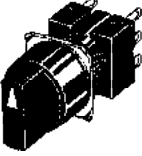
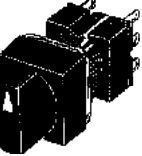
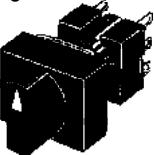
Note: To complete the part number, replace the □ symbol with the appropriate color code from the *Operator Color Code* table below.

Operator Color Codes

(Actual color of yellow pushbuttons more closely resembles amber than true yellow).

Code	Color
R	Red
Y	Yellow
G	Green

■ A165W ILLUMINATED (3 POSITION) KNOB-TYPE SELECTOR SWITCH (COMPLETE ASSEMBLY)

Description				Part number	
Appearance	Type	Rated voltage	Contacts	Maintained	Spring return from both
Round 	Full voltage LED (DC)	5 VDC	DPDT	A165W-T3M□-5D-2	A165W-T3A□-5D-2
		12 VDC		A165W-T3M□-12D-2	A165W-T3A□-12D-2
		24 VDC		A165W-T3M□-24D-2	A165W-T3A□-24D-2
	Transformer 24 V Secondary	110 VAC		A165W-T3M□-T1-2	A165W-T3A□-T1-2
		220 VAC		A165W-T3M□-T2-2	A165W-T3A□-T2-2
Square 	Full voltage LED (DC)	5 VDC	DPDT	A165W-A3M□-5D-2	A165W-A3A□-5D-2
		12 VDC		A165W-A3M□-12D-2	A165W-A3A□-12D-2
		24 VDC		A165W-A3M□-24D-2	A165W-A3A□-24D-2
	Transformer 24 V Secondary	110 VAC		A165W-A3M□-T1-2	A165W-A3A□-T1-2
		220 VAC		A165W-A3M□-T2-2	A165W-A3A□-T2-2
Rectangular 	Full voltage LED (DC)	5 VDC	DPDT	A165W-J3M□-5D-2	A165W-J3A□-5D-2
		12 VDC		A165W-J3M□-12D-2	A165W-J3A□-12D-2
		24 VDC		A165W-J3M□-24D-2	A165W-J3A□-24D-2
	Transformer 24 V Secondary	110 VAC		A165W-J3M□-T1-2	A165W-J3A□-T1-2
		220 VAC		A165W-J3M□-T2-2	A165W-J3A□-T2-2

Note: To complete the part number, replace the □ symbol with the appropriate color code from the Operator *Color Code* table below.


Operator Color Codes

(Actual color of yellow pushbuttons more closely resembles amber than true yellow).



Code	Color
R	Red
Y	Yellow
G	Green

Accessories (Order Separately)

■ PANEL PLUGS

Shape	Classification	Remarks	Part number
	Rectangular	Used for covering the panel cutouts for future panel expansion.	A3BJ-3003
	Square		A3BA-3003
	Round		A3BT-3003

■ TOOLS

Name	Shape	Applicable types					Remarks	Part number
		Pushbutton Switch	Knob-type Selector Switch	Key-type Selector Switch	Emergency Stop Switch	Pilot Light		
Screw fitting		Yes	Yes	Yes	Yes	Yes	Convenient for ganged installation. Tighten to a torque of 0.39 N • m (5 kgf • cm) min.	A3B-3004
Extractor		Yes	Yes	Yes	Yes	Yes	Convenient for extracting the Switch Unit and Lamps.	A16Z-5080

Specifications

■ APPROVED STANDARDS

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)

■ RATINGS

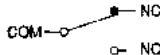
AC resistive load (AC15)	DC resistive load (DC13)
3 A, 250 VAC 5 A, 125 VAC	3 A, 30 VDC

Minimum applicable load: 1 mA at 5 VDC

Rated values are obtained from tests conducted under the following conditions according to JIS C4505 and C4520.

1. Load: Resistive load
2. Mounting conditions: No vibration and no shock
3. Temperature: 20°±2°C (68F°±3.6F°)
4. Operating frequency: 20 times/min

■ CONTACT

Name	Contact
SPDT	

■ LED

Rated voltage	Rated current	Operating voltage	Internal limiting resistor
5 VDC	30 mA	5 VDC±5%	33 Ω
12 VDC	15 mA	12 VDC±5%	270 Ω
24 VDC	10 mA	24 VDC±5%	1600 Ω

■ CHARACTERISTICS

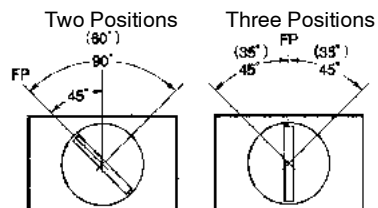
Item	Knob-type Selector Switch	
Allowable operating frequency (See Note 1.)	Mechanical	20 operations/min max.
	Electrical	10 operations/min max.
Insulation resistance	100 M Ω min. (at 500 VDC)	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 2,000 VAC, 50/60 Hz for 1 min between terminals of different polarity and also between each terminal and ground 1,000 VAC, 50/60 Hz for 1 min between lamp terminals (See note 2)	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Mechanical	500 m/s ² (50G)
	Malfunction	150 m/s ² (15G) max. (malfunction within 1 ms)
Life expectancy	Mechanical	250,000 operations min.
	Electrical	100,000 operations min.
Ambient temperature	Operating: -10°C to 55°C (14°F to 131°F) with no icing or condensation Storage: -25°C to 65°C (-13°F to 149°F) with no icing or condensation	
Ambient humidity	Operating: 35% to 85%	
Electric shock protection class	Class II	
Degree of contamination	3 (IEC947-5-1)	
Weight	Approx. 13 g (0.46 oz) in the case of a Illuminated DPDT switch	

- Note: 1. Set and reset constitute one operation.
2. With LED and incandescent lamp not mounted.

■ OPERATING CHARACTERISTICS

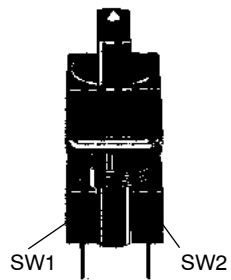
Features	Knob-type Selector Switch	
	2 Positions	3 Positions
Operating force (OF) max.	0.1 N • m (1,000 gf • cm)	
Set position (SP)	90 \pm 5°	45 \pm 10°

■ OPERATION ANGLE



Note: The angle used for automatic reset is shown in parentheses.

■ CONTACTS



Position	Contact				
	SPDT		DPDT		
	Position	SW	Position	SW1	SW2
2 Positions					
3 Positions	—				
	—				
	—				

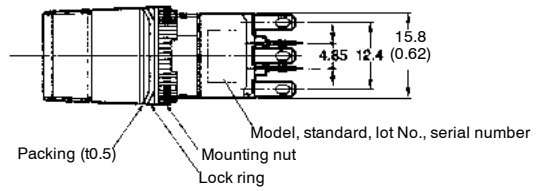
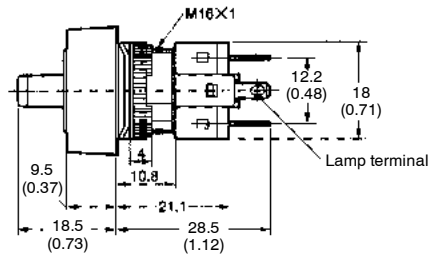
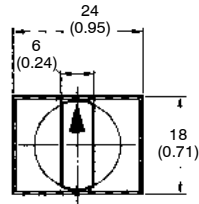
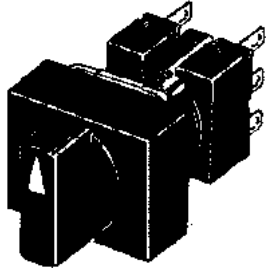
Dimensions

Unit: mm (inch)

■ KNOB-TYPE SELECTOR SWITCHES WITHOUT TRANSFORMER

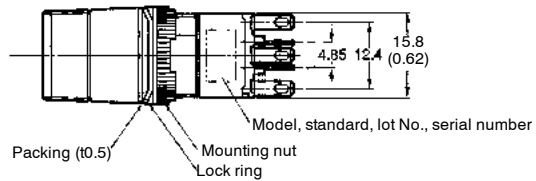
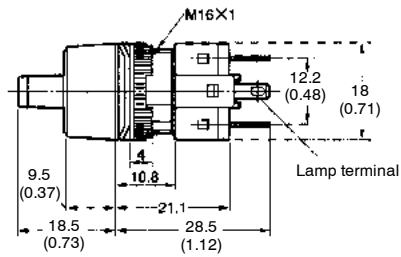
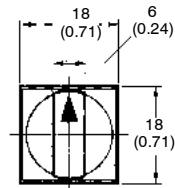
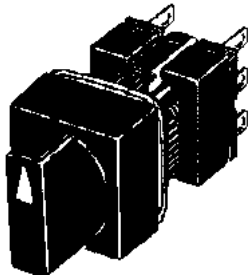
Rectangular A165□-J

Solder terminals



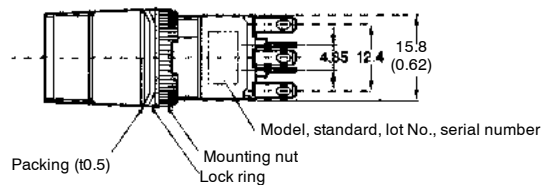
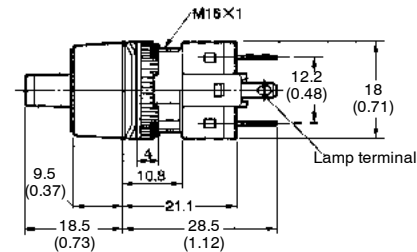
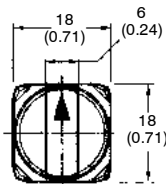
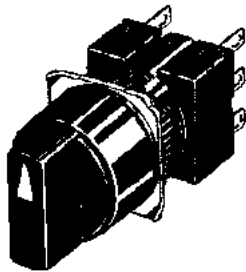
Square A165□-A

Solder terminals



Round A165□-T

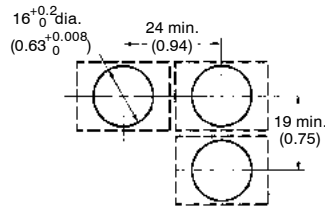
Solder terminals



■ PANEL CUTOUTS

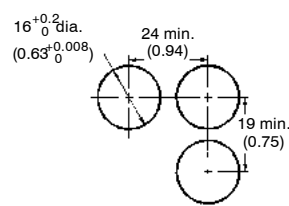
Rectangular A165□-J

(Top View)



Square A165□-A Round A165□-T

(Top View)



- Note:
1. Make sure the thickness of the mounting panel is between 0.5 and 3.2 mm. If, however, a Switch Guard or Dust Cover is used, the thickness of the mounting panel must be between 0.5 and 2 mm.
 2. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.

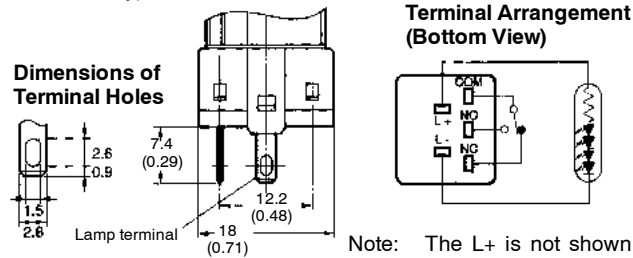
■ TERMINAL ARRANGEMENT

Without Transformer

Lamp terminals are not provided with the Non-illuminated Knob-type Selector Switches and Key-type Selector Switches.

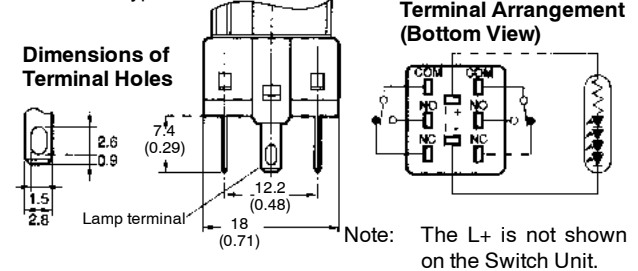
SPDT Switches

Illuminated type



DPDT Switches

Illuminated type



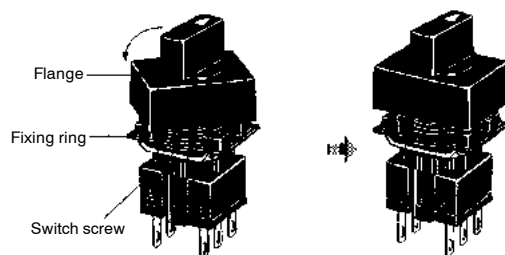
Installation

For details on Panel Mounting, mounting and removing the Switch Unit, refer to installation details for the A16 Pushbutton Switch.

■ FLANGE ROTATION (COMMON TO ALL SELECTOR SWITCHES)

A165 Knob-type Selector Switch

Fix the Switch screw and rotate the flange in 45° turns.



NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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