

Key-type Selector Switch

A165K

Mounting Aperture of 16 mm

- Modular construction
- Oil-resistant IP65 models
- UL and CSA approved.
- Conforms to EN60947-5-1, IEC947-5-1
- Short mounting depth, less than 28.5 mm below panel
- Wide range of switching capacity from standard to microload
- Automatic and manual models available



Ordering Information

■ Model Number Legend

The model numbers used to order sets of Units are illustrated below. One set comprises the Selector, Switch, and 2 Keys.

A 1 6 5 K - J 3ML - 2

(1) Shape of Selector

Symbol	Shape	Color
J	Rectangular	Black
A	Square	
T	Round	
BA	Square (24-mm square)	

(2) Number of Notches/Resetting Method

Symbol	No. of notches	Reset method	Key release position
2ML	2 notches	Manual	Left
2MR			Right
2M		Automatic	Left and right
2AL	3 notches	Manual	Left
3MC			Center
3MR			Right
3ML			Left
3M	3 notches	Automatic	Left, right, and center
3AC			Center
3MAC	3 notches	CCW-manual, CW-automatic	Center
3MAL			Left
3MA			Left, center
3AMC	3 notches	CCW-automatic, CW-manual	Center
3AMR			Right
3AM			Center, right

(3) 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.
2. PCB terminals are available only with 2-notch models.

■ Model Number Legend (Subassembly)

1. Selector

A165K-
1 2



1. Flange Shape

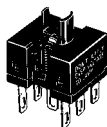
J: Rectangular
 A: Square
 T: Round
 BA: Square (24-mm square)

2. Number of Notches/Reset Method/Key Release Position

2ML: 2 notches/Manual/Left
 2MR: 2 notches/Manual/Right
 2M: 2 notches/Manual/Right and left
 2AL: 2 notches/Automatic/Left
 3MC: 3 notches/Manual/Center
 3MR: 3 notches/Manual/Right
 3ML: 3 notches/Manual/Left
 3M: 3 notches/Manual/Right, left, and center
 3AC: 3 notches/Automatic/Center

2. Switch (Same as for Knob-type Selector Switches)

A16S- -
1 2 3



1. Number of Notches

2N: 2 notches
 3N: 3 notches

2. Contacts

1: SPDT
 2: DPDT

3. Terminals

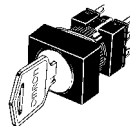
None: Solder terminals (tab terminals #110)

■ Ordering as a Set

The model numbers used to order sets of Units are given in the following tables. One set comprises the Selector and Switch.

■ Solder Terminals

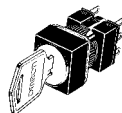
A165K-J (Rectangular) Models



IP65 Oil-resistant

Number of notches	Output	Reset method	Key release position	Model
2 notches	SPDT	Manual	Left	A165K-J2ML-1
			Right	A165K-J2MR-1
			Left and right	A165K-J2M-1
		Automatic	Left	A165K-J2AL-1
	DPDT	Manual	Left	A165K-J2ML-2
			Right	A165K-J2MR-2
			Left and right	A165K-J2M-2
		Automatic	Left	A165K-J2AL-2
3 notches	DPDT	Manual	Center	A165K-J3MC-2
			Right	A165K-J3MR-2
			Left	A165K-J3ML-2
			Left, right, and center	A165K-J3M-2

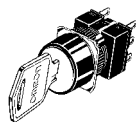
A165K-A (Square) Models








IP65 Oil-resistant

Number of notches	Output	Reset method	Key release position	Model
2 notches	SPDT	Manual	Left	A165K-A2ML-1
			Right	A165K-A2MR-1
			Left and right	A165K-A2M-1
		Automatic	Left	A165K-A2AL-1
	DPDT	Manual	Left	A165K-A2ML-2
			Right	A165K-A2MR-2
			Left and right	A165K-A2M-2
		Automatic	Left	A165K-A2AL-2
3 notches	DPDT	Manual	Center	A165K-A3MC-2
			Right	A165K-A3MR-2
			Left	A165K-A3ML-2
			Left, right, and center	A165K-A3M-2

A165K-T (Round) Models



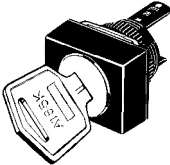



















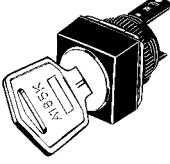



















IP65 Oil-resistant

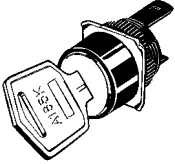



















Number of notches	Output	Reset method	Key release position	Model
2 notches	SPDT	Manual 	Left	A165K-T2ML-1
			Right	A165K-T2MR-1
			Left and right	A165K-T2M-1
		Automatic 	Left	A165K-T2AL-1
	DPDT	Manual 	Left	A165K-T2ML-2
			Right	A165K-T2MR-2
			Left and right	A165K-T2M-2
		Automatic 	Left	A165K-T2AL-2
3 notches	DPDT	Manual 	Center	A165K-T3MC-2
			Right	A165K-T3MR-2
			Left	A165K-T3ML-2
			Left, right, and center	A165K-T3M-2

■ Ordering Individually

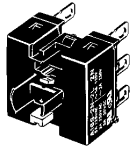
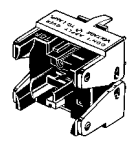
Selectors and Switches can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

Selectors


Appearance	Number of notches	Reset method	Key release position	Model
Rectangular (A165K-J) 	2 notches	Manual		A165K-J2ML
				A165K-J2MR
				A165K-J2M
		Automatic 		A165K-J2AL
	3 notches	Manual		A165K-J3MC
				A165K-J3MR
				A165K-J3ML
				A165K-J3M
		Automatic 		A165K-J3AC
	3 notches	Mixed-operation 		A165K-J3MAC
				A165K-J3MAL
				A165K-J3MA
		Mixed-operation 		A165K-J3AMC
				A165K-J3AMR
				A165K-J3AM
Square (A165K-A) 	2 notches	Manual		A165K-A2ML
				A165K-A2MR
				A165K-A2M
		Automatic 		A165K-A2AL
	3 notches	Manual		A165K-A3MC
				A165K-A3MR
				A165K-A3ML
				A165K-A3M
		Automatic 		A165K-A3AC
	3 notches	Mixed-operation 		A165K-A3MAC
				A165K-A3MAL
				A165K-A3MA
		Mixed-operation 		A165K-A3AMC
				A165K-A3AMR
				A165K-A3AM

Appearance	Number of notches	Reset method	Key release position	Model
	2 notches	Manual		A165K-T2ML
				A165K-T2MR
				A165K-T2M
		Automatic 		A165K-T2AL
	3 notches	Manual		A165K-T3MC
				A165K-T3MR
				A165K-T3ML
				A165K-T3M
		Automatic 		A165K-T3AC
	3 notches	Mixed-operation 		A165K-T3MAC
				A165K-T3MAL
				A165K-T3MA
		Mixed-operation 		A165K-T3AMC
				A165K-T3AMR
				A165K-T3AM

Switches


Appearance	Classification				Model
	Switch	2 notches	SPDT	Solder terminal	A16S-2N-1
			DPDT		A16S-2N-2
		3 notches	DPDT		A16S-3N-2
		2 notches	SPDT	PCB terminal	A16S-2N-1P
			DPDT		A16S-2N-2P

Switches with Screw-Less Clamp


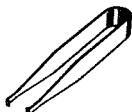
Appearance	Classification				Model	Remarks
	Common to general load and micro load.	DPDT	2 notches	Non-lighted	A16-2S	Common to ones for pushbutton switches.
			3 notches		A16S-3N-2LS	---

Accessories (Order Separately)

■ Accessories

Name	Appearance	Classification	Model	Remarks
Panel Plugs		Rectangular	A16ZJ-3003	Used for covering the panel cutouts for future panel expansion. Protective code: IP40
		Square	A16ZA-3003	
		Round	A16ZT-3003	

■ Tools

Name	Appearance	Model	Applicable types					Remarks
			Pushbutton Switch	Knob-type Selector Switch	Key-type Selector Switch	Emergency Stop Switch	Indicator	
Screw Fitting		A16Z-3004	Yes	Yes	Yes	Yes	Yes	Convenient for ganged installation. Tighten to a torque of 0.98 N · m
Extractor		A16Z-5080	Yes	Yes	Yes	Yes	Yes	Convenient for extracting the Switches and Lamps.

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	DC resistive load
3 A at 250 VAC 5 A at 125 VAC	3 A at 30 VDC

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

Contact

Name	Contact
DPDT	

■ Characteristics

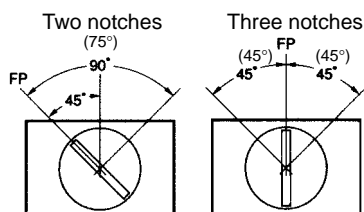
Item		Key-type Selector Switch
Allowable operating frequency	Mechanical	20 operations/minute max.
	Electrical	10 operations/minute max.
Insulation resistance		100 MΩ min. (at 500 VDC)
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 2,000 VAC, 50/60 Hz for 1 min between terminals of different polarity and also between each terminal and ground
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Mechanical	500 m/s ²
	Malfunction	150 m/s ² max. (malfunction within 1 ms)
Life expectancy	Mechanical	250,000 operations min. (life of key: 10,000 operations min.)
	Electrical	100,000 operations min.
Ambient temperature		Operating: -10°C to 55°C (with no icing or condensation) Storage: -25°C to 65°C (with no icing or condensation)
Ambient humidity		Operating: 35% to 85%
Electric shock protection class		Class II
PTI (tracking characteristic)		175
Degree of contamination		3 (IEC947-5-1)
Weight		Approx. 26.5 g (in the case of a DPDT switch key)

Note: Set and reset constitute one operation.

■ Operating Characteristics

Type	Key-type Selector Switch	
	2 notches	3 notches
Features		
Operating force (OF) max.	9.8 N • m	
Set position (SP)	90±5°	45°+10/-0

■ Operation Angle



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

Nomenclature

Selector

Flange Shape

Rectangular (A165K-J)



Square (A165K-A)



Round (A165K-T)



Protective Structure

- Oil-resistant IP65

Key



Number of Notches and Reset Method

- 2 Notches
 - Manual
 - Automatic
- 3 Notches
 - Manual
 - Mixed-operation

Switch

Switch Specifications

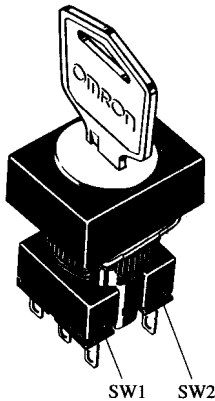
- Standard Loads
 - 5 A at 125 VAC
 - 3 A at 250 VAC
 - 3 A at 30 VDC
- Minimum applicable load: 1 mA at 5 VDC

Terminal Type

- Solder terminals (tab terminals #110)
- PCB terminals



■ Contacts



Notch	Contact				
	SPDT		DPDT		
	Position	SW	Position	SW1	SW2
2 notches					
3 notches	---				

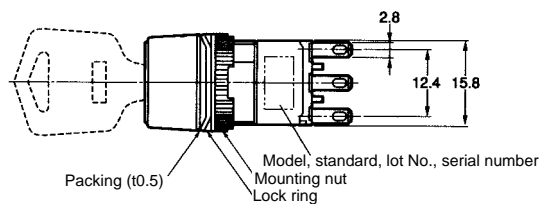
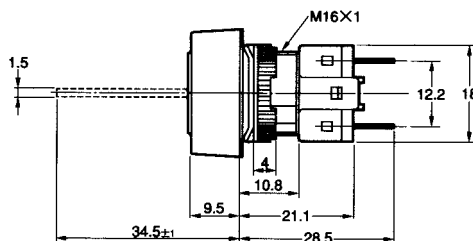
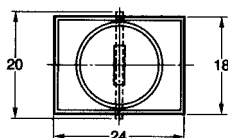
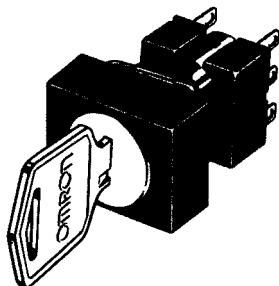
Dimensions

Note: All units are in millimeters unless otherwise indicated.

■ Key-type Selector Switches

Rectangular A165K-J

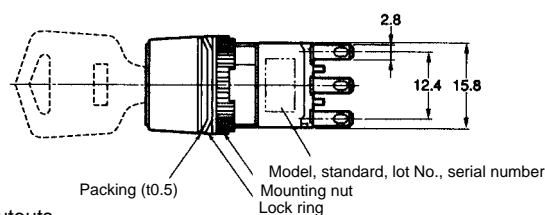
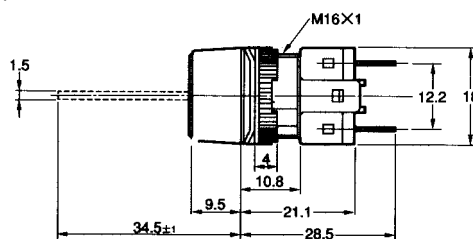
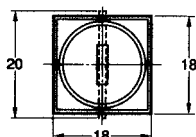
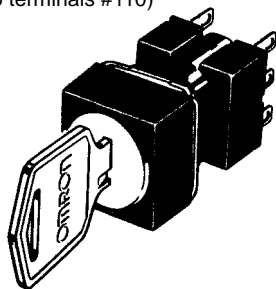
Solder terminals (tab terminals #110)



Note: See page 104 for panel cutouts.

Square A165K-A

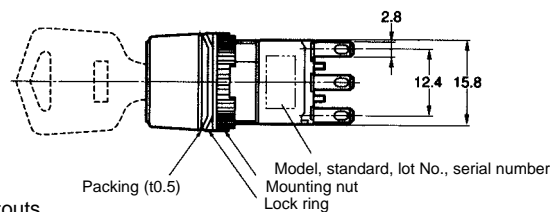
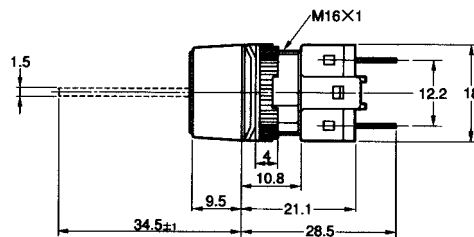
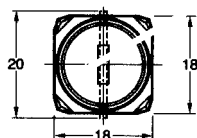
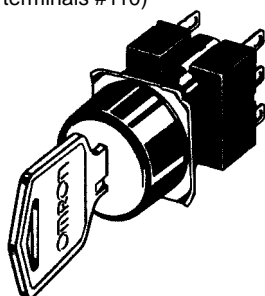
Solder terminals
(tab terminals #110)



Note: See page 104 for panel cutouts.

Round A165K-T

Solder terminals
(tab terminals #110)

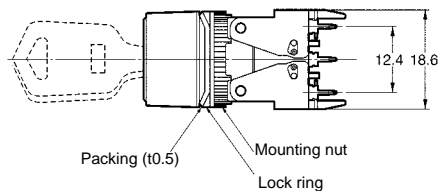
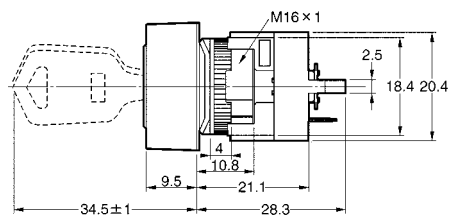
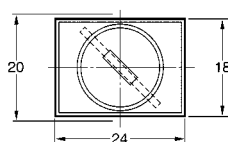
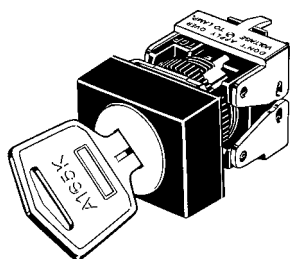


Note: See page 104 for panel cutouts.

The following diagrams show the rectangular model as a representative example.

Rectangular A165K-J

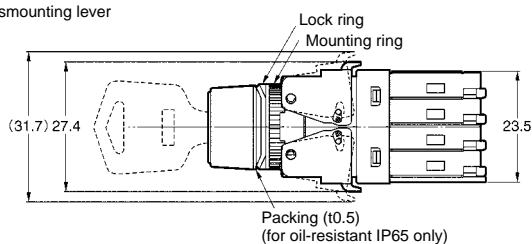
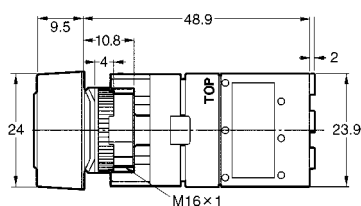
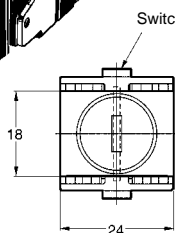
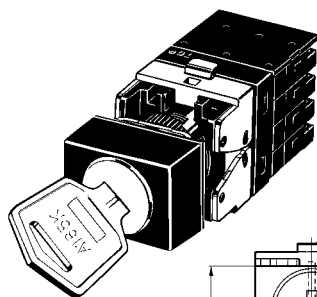
PCB terminals



Note: See page 104 for panel cutouts.

Rectangular A165K□-2S

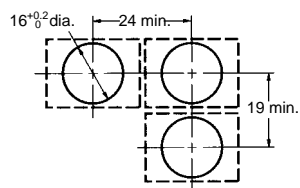
Screw-Less Clamp



■ Panel Cutouts Models with Solder Terminals

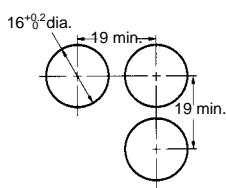
Rectangular A165□-J

(Top View)



Square A165□-A Round A165□-T

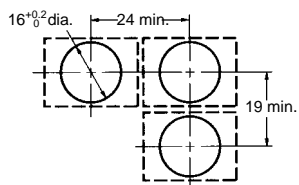
(Top View)



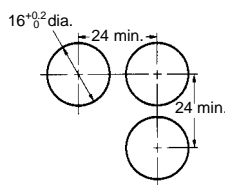
- Note:**
1. Make sure the thickness of the mounting panel is 0.5 to 3.2 mm.
 2. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.

Models with PCB Terminals

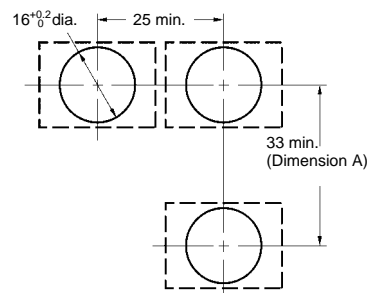
Rectangular A165□-J (Top View)



Square A165□-A Round A165□-T (Top View)



Rectangular A165K□-2S (Top View)



Recommended panel thickness: 0.5 to 3.2 mm

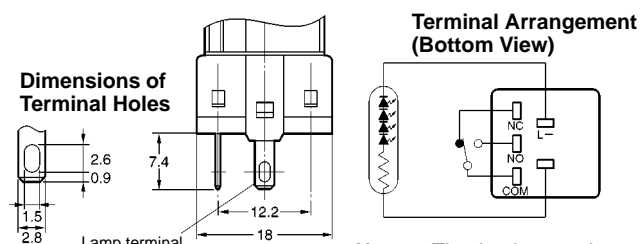
- Note:**
1. Ensure that the variation in the distance between the centers of neighboring mounting holes is less than ± 0.1 mm.
 2. Make sure the thickness of the mounting panel is 0.5 to 3.2 mm. If, however, a Switch Guard or Dust Cover is used, the thickness of the mounting panel must be 0.5 to 2 mm.
 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

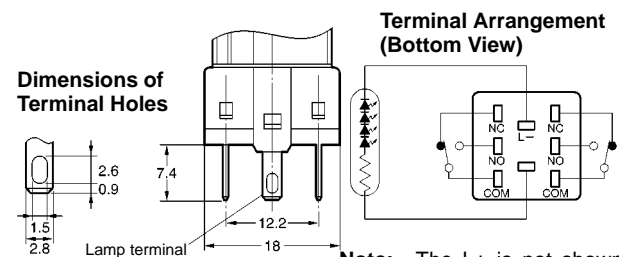
Lamp terminals are not provided with the Non-lighted Knob-type Selector Switches and Key-type Selector Switches.

Lighted SPDT Switches



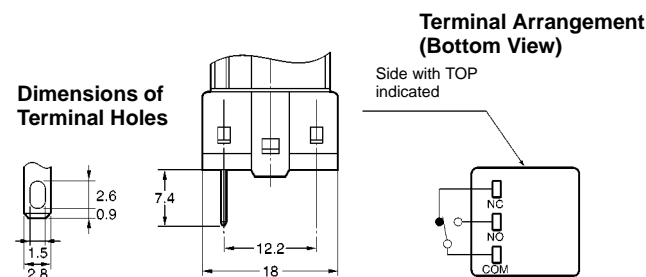
Note: The L+ is not shown on the Switch.

Lighted DPDT Switches

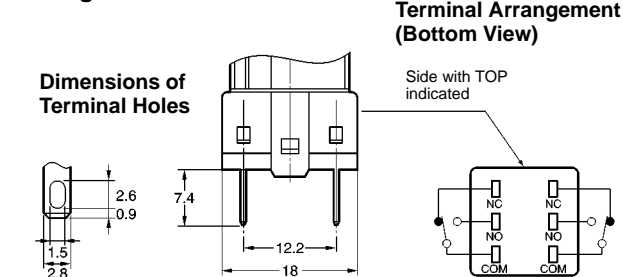


Note: The L+ is not shown on the Switch.

Non-lighted SPDT Switches

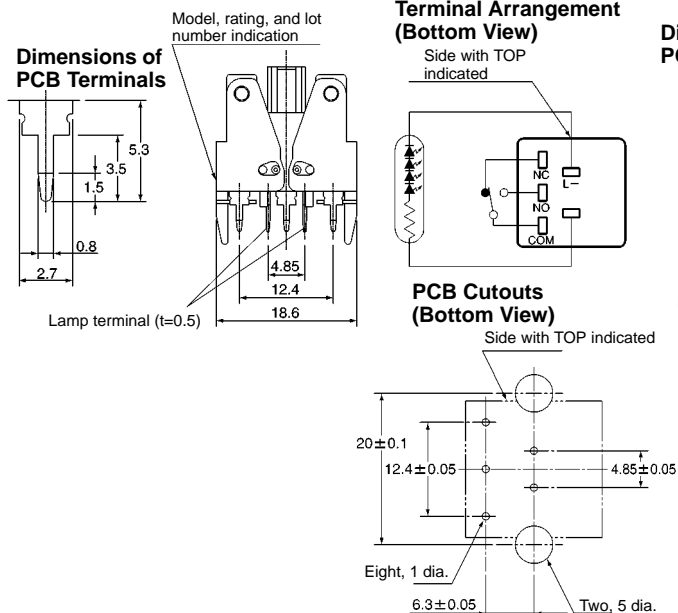


Non-lighted DPDT Switches

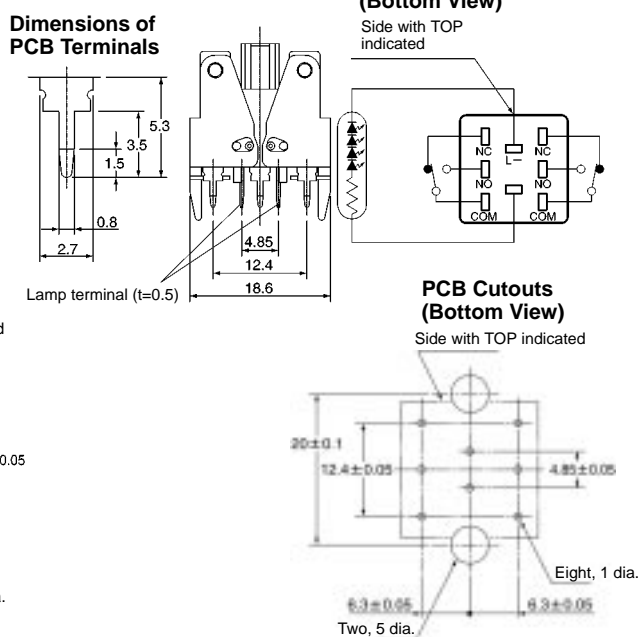


Lighted Models with PCB Terminals

Lighted SPDT Switches



Lighted DPDT Switches

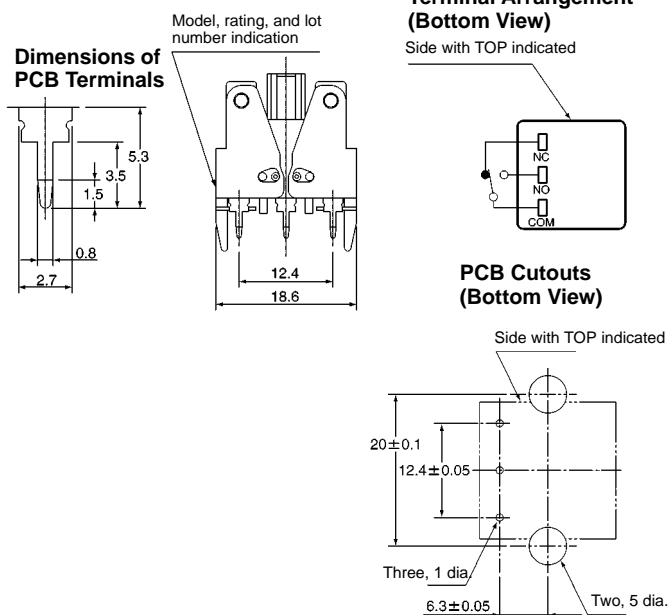


Note: For details of the terminal arrangement for Screw-Less Clamps, refer to page 65.

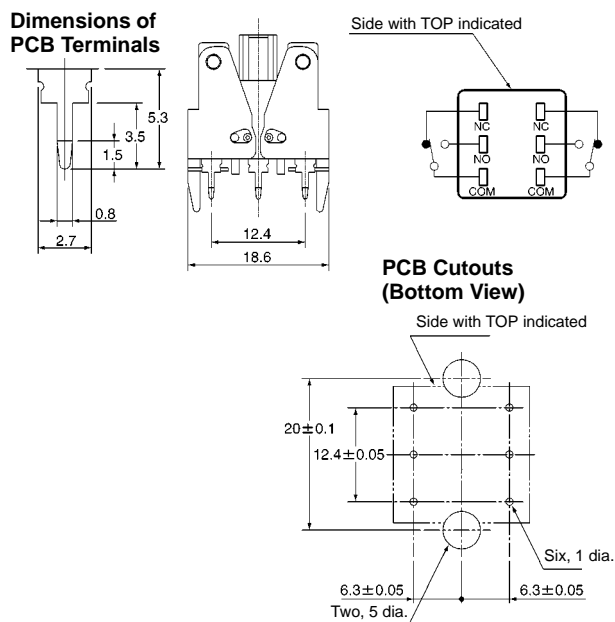
Non-lighted Models with PCB Terminals

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

Non-lighted SPDT Switches



Non-lighted DPDT Switches



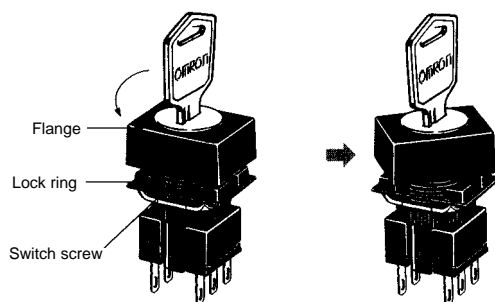
Installation

For details on mounting the Switch to a panel, and mounting and dismantling the Switch, refer to installation details for the A16 Pushbutton Switch.

Flange Rotation

A165 Key-type Selector Switch

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



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.