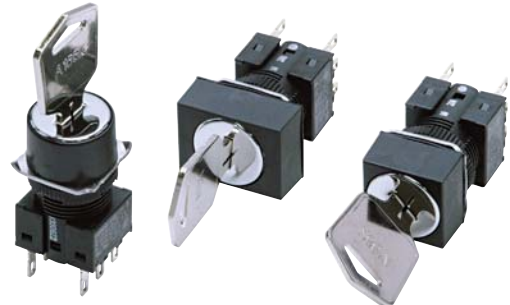


# A165K

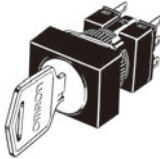
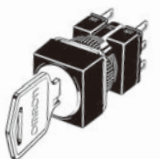
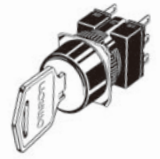
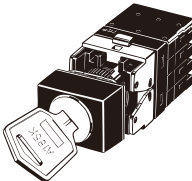
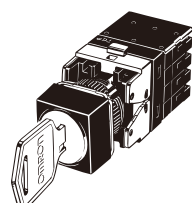
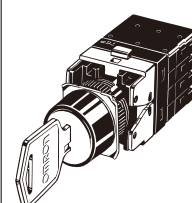
## Separate Construction with Cylindrical 16-dia. Body



- Short mounting depth, less than 28.5 mm below panel
- Wide range of switching capacity from standard to microload
- Oil-resistant IP65 models



## List of Models

|                            | Model                                                                                                     |                                                                                                           |                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                            | Rectangular                                                                                               | Square                                                                                                    | Round                                                                                                       |
| Solder terminals           |  <p>A165K-J Series</p>  |  <p>A165K-A Series</p>  |  <p>A165K-T Series</p>  |
| Screw-less clamp connector |  <p>A165K-J Series</p> |  <p>A165K-A Series</p> |  <p>A165K-T Series</p> |

## Model Number Structure

**Model Number Legend**..... The model numbers used to order sets of Units are illustrated below. One set comprises the Selector, Switch, and 2 Keys.  
For information on combinations, refer to *Ordering Information* on page 3.

(1)      (2)      (3)  
**A 1 6 5 K - J 3 M L - 2**

### (1) Shape of Selector

| Symbol | Shape       | Color |
|--------|-------------|-------|
| J      | Rectangular | Black |
| A      | Square      |       |
| T      | Round       |       |

### (2) Number of Notches/Resetting Method

| Symbol | No. of notches | Reset method | Key release position    |
|--------|----------------|--------------|-------------------------|
| 2ML    | 2 notches      | Manual       | Left                    |
| 2MR    |                |              | Right                   |
| 2M     |                |              | Left and right          |
| 2AL    |                | Automatic    | Left                    |
| 3MC    | 3 notches      | Manual       | Center                  |
| 3MR    |                |              | Right                   |
| 3ML    |                |              | Left                    |
| 3M     |                |              | Left, right, and center |
| 3AC    | 3 notches      | Automatic    | Center                  |

### (3) Contact Configuration

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

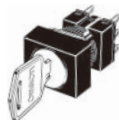
Note: Only DPDT contacts are available with 3-notch models.

## 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, Switch and 2 Keys.

### Solder Terminals

Rectangular Models



A165K-J

Oil-resistant IP65

| Number of notches | Output | Reset method | Key release position    | Model        |
|-------------------|--------|--------------|-------------------------|--------------|
| 2 notches         | SPDT   | Manual       | Left                    | A165K-J2ML-1 |
|                   |        |              | Right                   | A165K-J2MR-1 |
|                   |        | Automatic    | Left and right          | A165K-J2M-1  |
|                   |        |              | Left                    | A165K-J2AL-1 |
|                   | DPDT   | Manual       | Left                    | A165K-J2ML-2 |
|                   |        |              | Right                   | A165K-J2MR-2 |
|                   |        | Automatic    | Left and right          | A165K-J2M-2  |
|                   |        |              | 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  |

Square Models



A165K-A

Oil-resistant IP65

| Number of notches | Output | Reset method | Key release position    | Model        |
|-------------------|--------|--------------|-------------------------|--------------|
| 2 notches         | SPDT   | Manual       | Left                    | A165K-A2ML-1 |
|                   |        |              | Right                   | A165K-A2MR-1 |
|                   |        | Automatic    | Left and right          | A165K-A2M-1  |
|                   |        |              | Left                    | A165K-A2AL-1 |
|                   | DPDT   | Manual       | Left                    | A165K-A2ML-2 |
|                   |        |              | Right                   | A165K-A2MR-2 |
|                   |        | Automatic    | Left and right          | A165K-A2M-2  |
|                   |        |              | 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  |

Round Models



A165K-T

Oil-resistant IP65

| Number of notches | Output | Reset method | Key release position    | Model        |
|-------------------|--------|--------------|-------------------------|--------------|
| 2 notches         | SPDT   | Manual       | Left                    | A165K-T2ML-1 |
|                   |        |              | Right                   | A165K-T2MR-1 |
|                   |        | Automatic    | Left and right          | A165K-T2M-1  |
|                   |        |              | Left                    | A165K-T2AL-1 |
|                   | DPDT   | Manual       | Left                    | A165K-T2ML-2 |
|                   |        |              | Right                   | A165K-T2MR-2 |
|                   |        | Automatic    | Left and right          | A165K-T2M-2  |
|                   |        |              | 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 Information

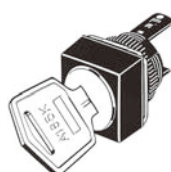
**Ordering Individually** ..... Selectors and Switches can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

### Operation Units (Listed on Page 5.)

Rectangular  
(A165K-J)



Square  
(A165K-A)



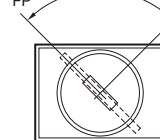
Round  
(A165K-T)



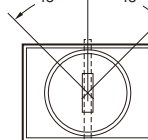
Two keys are provided.

(Standard condition when shipped)

Switches with  
2 Notches  
(75°)  
90°



Switches with  
3 Notches  
(45°)  
45°



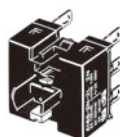
Note: The figures in parentheses are for self-resetting models.

FP: Free position

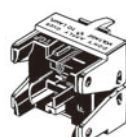


### Socket Units (Listed on Page 5.)

Solder terminals



PCB terminals



Screw-less clamp  
connector



## Ordering Information

**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<br>(A165K-J)<br> | 2 notches         | Manual       | ⌚                    | A165K-J2ML |
|                                                                                                               |                   |              | ⌚                    | A165K-J2MR |
|                                                                                                               |                   | Automatic ⌚  | ⊗                    | A165K-J2M  |
|                                                                                                               | 3 notches         | Manual       | ⌚                    | A165K-J2AL |
|                                                                                                               |                   |              | ⌚                    | A165K-J3MC |
|                                                                                                               |                   |              | ⌚                    | A165K-J3MR |
|                                                                                                               |                   |              | ⌚                    | A165K-J3ML |
|                                                                                                               |                   |              | ⊗                    | A165K-J3M  |
|                                                                                                               |                   | Automatic ⌚  | ⌚                    | A165K-J3AC |
| Square<br>(A165K-A)<br>      | 2 notches         | Manual       | ⌚                    | A165K-A2ML |
|                                                                                                               |                   |              | ⌚                    | A165K-A2MR |
|                                                                                                               |                   | Automatic ⌚  | ⊗                    | A165K-A2M  |
|                                                                                                               | 3 notches         | Manual       | ⌚                    | A165K-A2AL |
|                                                                                                               |                   |              | ⌚                    | A165K-A3MC |
|                                                                                                               |                   |              | ⌚                    | A165K-A3MR |
|                                                                                                               |                   |              | ⌚                    | A165K-A3ML |
|                                                                                                               |                   |              | ⊗                    | A165K-A3M  |
|                                                                                                               |                   | Automatic ⌚  | ⌚                    | A165K-A3AC |
| Round<br>(A165K-T)<br>      | 2 notches         | Manual       | ⌚                    | A165K-T2ML |
|                                                                                                               |                   |              | ⌚                    | A165K-T2MR |
|                                                                                                               |                   | Automatic ⌚  | ⊗                    | A165K-T2M  |
|                                                                                                               | 3 notches         | Manual       | ⌚                    | A165K-T2AL |
|                                                                                                               |                   |              | ⌚                    | A165K-T3MC |
|                                                                                                               |                   |              | ⌚                    | A165K-T3MR |
|                                                                                                               |                   |              | ⌚                    | A165K-T3ML |
|                                                                                                               |                   |              | ⊗                    | A165K-T3M  |
|                                                                                                               |                   | Automatic ⌚  | ⌚                    | A165K-T3AC |

### 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 standard load and microload. | DPDT | 2 notches | A16-2S      | Common to ones for pushbutton switches. |
|                                                                                     |                                        |      | 3 notches | A16S-3N-2LS | ---                                     |

## 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

#### 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 times/min

### Characteristics

#### Socket Units

| Item                            | Type                                    | 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             | 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                                    |
| 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                              | 250,000 operations min. (durability of key: 10,000 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. 26.5 g (in the case of a DPDT switch key)                   |
| Ambient operating temperature   |                                         | -10°C to 55°C<br>(with no icing or condensation)                    |
| Ambient operating humidity      |                                         | 35% to 85%RH                                                        |
| Ambient storage temperature     |                                         | -25°C to 65°C<br>(with no icing or condensation)                    |

#### Screw-less Clamp

| Item                              | Type             | 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 ±1 mm                                                   |                     |                      |                      |
| Compliant standards               |                  | JIS C 2811 Terminal Blocks for Industrial Use              |                     |                      |                      |

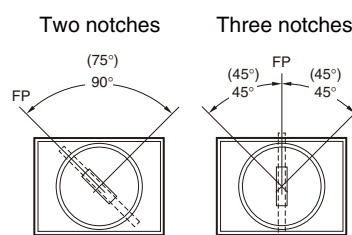
### Contact Form

| Name | Contact form |
|------|--------------|
| SPDT |              |

### Operating Characteristics

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

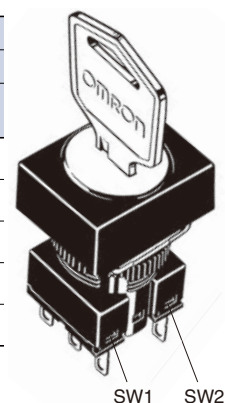
### Operation Angle



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

### Contact Configuration

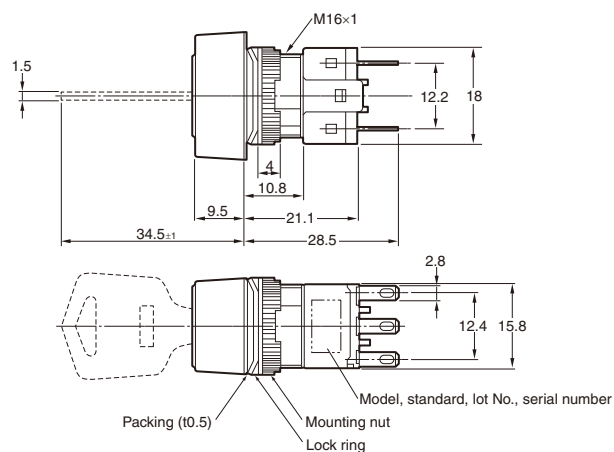
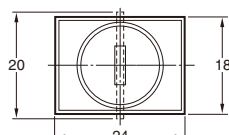
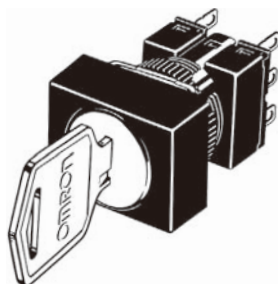
| No. of notches | Contact configuration |    |          |     |     |
|----------------|-----------------------|----|----------|-----|-----|
|                | SPDT                  |    | DPDT     |     |     |
|                | Position              | SW | Position | SW1 | SW2 |
| 2 notches      |                       |    |          |     |     |
|                |                       |    |          |     |     |
| 3 notches      | ---                   |    |          |     |     |
|                |                       |    |          |     |     |
|                |                       |    |          |     |     |



## Dimensions

### Rectangular A165K-J

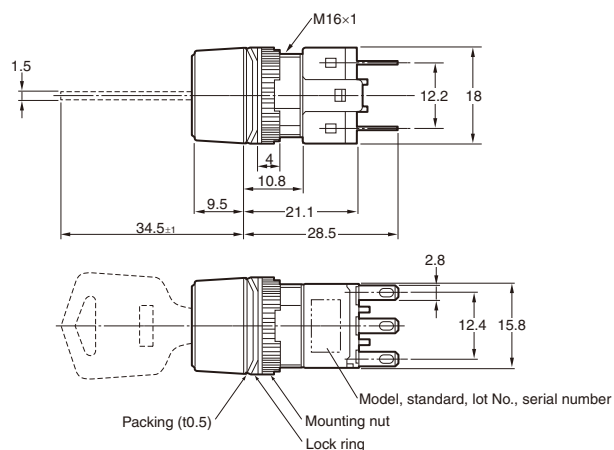
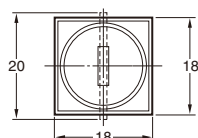
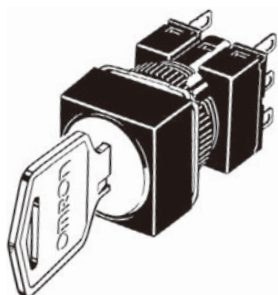
Solder terminals (tab terminals #110)



\* Refer to the A165S/W for Panel cutouts.

### Square A165K-A

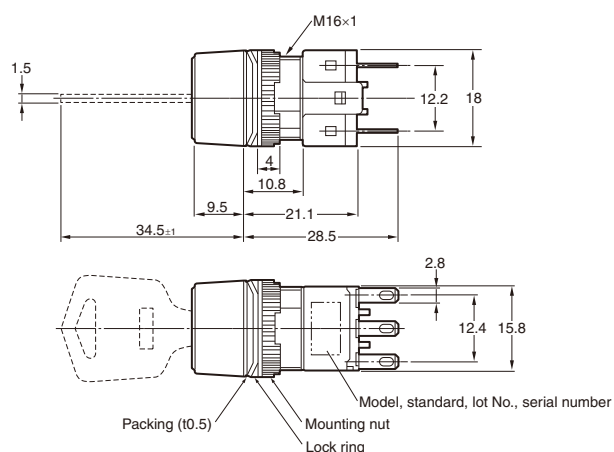
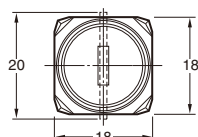
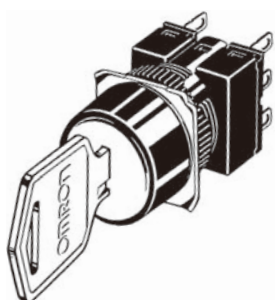
Solder terminals (tab terminals #110)



\* Refer to the A165S/W for Panel cutouts.

### Round A165K-T

Solder terminals (tab terminals #110)



\* Refer to the A165S/W for Panel cutouts.