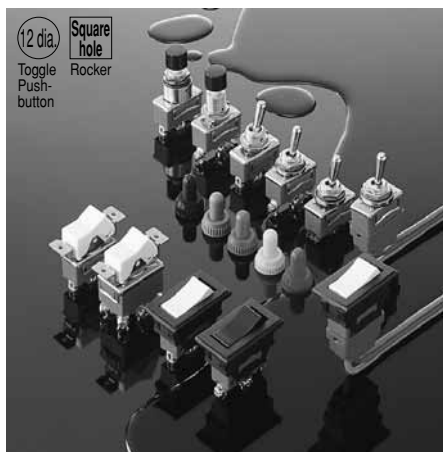


15A HIGH SNAP SWITCHES TOGGLE, ROCKER AND PUSH-BUTTON TYPES

T-15 SERIES SWITCHES



RoHS compliant

FEATURES

1. Series now includes rocker and push-button switches.

Based on the well-established T-15 Series switch, the mechanism is kept as is and a rocker type and push-button type have been added to the series. (Note that the push-button type is rated at 10 A.)

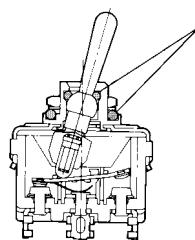
2. Sealed type added for use in different environments.

Packing is used where parts join and an O-ring is used to seal moving parts. New to the series, this type can be used in harsh environments such as those with water, oil, dust, and gas.

• Panel-sealed type

Entry of water, oil, dust and gas from the front of the panel is prevented.

(Panel front: IP67*; Inside of panel: IP40)

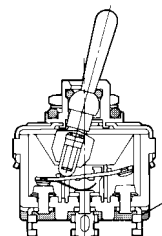


Prevention of water, oil, dust, and gases from entering through the panel with O-rings

• Terminal-sealed type

Both switch body and terminals have been sealed to protect from dust and gas that enters from the panel.

(Panel front: IP67*; Inside of panel: IP60)



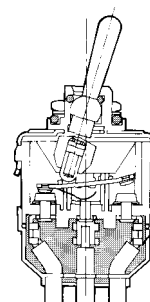
Sealing the joint part of switch body with packing rubber.

Terminal area is sealed with epoxy resin.

• Wire lead type

Furthermore, a cover is provided for the terminals to keep out water and oil that enters from the panel.

(Panel front: IP67*; Inside of panel: IP67)



Sealing with a cover and epoxy resin.

Remark: The asterisk in "Panel front: IP67*" means this only applies to toggle and push-button types.

The panel surface for the rocker type is IP64. Please see NOTES 1 and 2 regarding use of the sealed type.

3. Rubber cap also available in silicon type for excellent weather resistance.

• 5 colors available so you can distinguish switches by purpose.

<Example>

Black: For main power supply

Grey: For setting and switching

Red: For resetting

• With a usable ambient temperature range of -25°C to $+85^{\circ}\text{C}$, use is possible in environments that require resistance against heat and cold.

ASSORTMENT

| Kind of actuator | Standard type | Sealed type | | | Number of pole | | | | Shape of terminal | | | |
|------------------|---------------|-------------------|----------------------|-----------------|----------------|-----------|-------------------------|-------------------------|-------------------|----------------|-----------------------------|-------------------------|
| | | Panel-sealed type | Terminal-sealed type | Wire leads type | 1P | 2P | 3P | 4P | Solder terminal | Screw terminal | .250 Quick-connect terminal | Wire lead |
| Toggle type | Available | Available | Available | Available | Available | Available | Available* ¹ | Available* ¹ | Available | Available | Available* ¹ | Available* ² |
| Rocker type | Available | Available | Available | Available | Available | Available | — | — | Available | Available | — | Available* ² |
| Push-button type | Available | Available | — | — | Available | Available | — | — | Available | Available | — | — |

Remarks: *¹: Only standard type

*²: Only wire leads type

TOGGLE PRODUCT TYPES



1. Standard type

1) Solder terminal and .250 Quick-connect terminal

| Number of poles | Kind of operation < >: Momentary position | Solder terminal | .250 Quick-connect terminal |
|-----------------|--|-----------------|-----------------------------|
| | | Product No. | Product No. |
| 1-pole | ON-OFF | T115A-F | T115A-AF |
| | ON-ON | T115D-F | T115D-AF |
| | ON-OFF-ON | T115E-F | T115E-AF |
| | ON-<ON> | T115F-F | T115F-AF |
| | <ON>-OFF-<ON> | T115G-F | T115G-AF |
| | ON-OFF-<ON> | T115H-F | T115H-AF |
| 2-pole | ON-OFF | T215K-F | T215K-AF |
| | ON-ON | T215N-F | T215N-AF |
| | ON-OFF-ON | T215P-F | T215P-AF |
| | ON-<ON> | T215R-F | T215R-AF |
| | <ON>-OFF-<ON> | T215S-F | T215S-AF |
| | ON-OFF-<ON> | T215T-F | T215T-AF |
| 3-pole | ON-OFF | T315K-F | T315K-AF |
| | ON-ON | T315N-F | T315N-AF |
| | ON-OFF-ON | T315P-F | T315P-AF |
| 4-pole | ON-OFF | T415K-F | T415K-AF |
| | ON-ON | T415N-F | T415N-AF |
| | ON-OFF-ON | T415P-F | T415P-AF |

2) Screw terminal

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | T115A-SF |
| | ON-ON | T115D-SF |
| | ON-OFF-ON | T115E-SF |
| | ON-<ON> | T115F-SF |
| | <ON>-OFF-<ON> | T115G-SF |
| | ON-OFF-<ON> | T115H-SF |
| 2-pole | ON-OFF | T215K-SF |
| | ON-ON | T215N-SF |
| | ON-OFF-ON | T215P-SF |
| | ON-<ON> | T215R-SF |
| | <ON>-OFF-<ON> | T215S-SF |
| | ON-OFF-<ON> | T215T-SF |
| 3-pole | ON-OFF | T315K-SF |
| | ON-ON | T315N-SF |
| | ON-OFF-ON | T315P-SF |
| 4-pole | ON-OFF | T415K-SF |
| | ON-ON | T415N-SF |
| | ON-OFF-ON | T415P-SF |

Remark: Standard installation accessories are included with the product.

2. Panel-sealed type

1) Solder terminal

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TP115A-F |
| | ON-ON | TP115D-F |
| | ON-OFF-ON | TP115E-F |
| | ON-<ON> | TP115F-F |
| | <ON>-OFF-<ON> | TP115G-F |
| | ON-OFF-<ON> | TP115H-F |
| 2-pole | ON-OFF | TP215K-F |
| | ON-ON | TP215N-F |
| | ON-OFF-ON | TP215P-F |
| | ON-<ON> | TP215R-F |
| | <ON>-OFF-<ON> | TP215S-F |
| | ON-OFF-<ON> | TP215T-F |

2) Screw terminal

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TP115A-SF |
| | ON-ON | TP115D-SF |
| | ON-OFF-ON | TP115E-SF |
| | ON-<ON> | TP115F-SF |
| | <ON>-OFF-<ON> | TP115G-SF |
| | ON-OFF-<ON> | TP115H-SF |
| 2-pole | ON-OFF | TP215K-SF |
| | ON-ON | TP215N-SF |
| | ON-OFF-ON | TP215P-SF |
| | ON-<ON> | TP215R-SF |
| | <ON>-OFF-<ON> | TP215S-SF |
| | ON-OFF-<ON> | TP215T-SF |

Remark: Of the standard installation accessories that come with the product, the front hex nut and lock washer are included.

3. Terminal-sealed type

1) Solder terminal

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TD115A-F |
| | ON-ON | TD115D-F |
| | ON-OFF-ON | TD115E-F |
| | ON-<ON> | TD115F-F |
| | <ON>-OFF-<ON> | TD115G-F |
| | ON-OFF-<ON> | TD115H-F |
| 2-pole | ON-OFF | TD215K-F |
| | ON-ON | TD215N-F |
| | ON-OFF-ON | TD215P-F |
| | ON-<ON> | TD215R-F |
| | <ON>-OFF-<ON> | TD215S-F |
| | ON-OFF-<ON> | TD215T-F |

Remark: Of the standard installation accessories that come with the product, the front hex nut and lock washer are included.

2) Screw terminal

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TD115A-SF |
| | ON-ON | TD115D-SF |
| | ON-OFF-ON | TD115E-SF |
| | ON-<ON> | TD115F-SF |
| | <ON>-OFF-<ON> | TD115G-SF |
| | ON-OFF-<ON> | TD115H-SF |
| 2-pole | ON-OFF | TD215K-SF |
| | ON-ON | TD215N-SF |
| | ON-OFF-ON | TD215P-SF |
| | ON-<ON> | TD215R-SF |
| | <ON>-OFF-<ON> | TD215S-SF |
| | ON-OFF-<ON> | TD215T-SF |

Remark: Of the standard installation accessories that come with the product, the front hex nut and lock washer are included.

4. Wire lead type

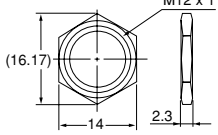
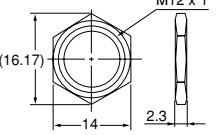
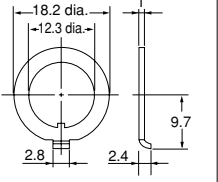
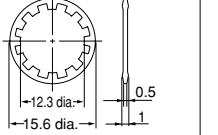
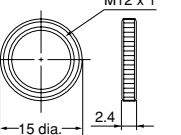
| Number of poles | Kind of operation < >: Momentary position | Wire lead type |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TC115A-F |
| | ON-ON | TC115D-F |
| | ON-OFF-ON | TC115E-F |
| | ON-<ON> | TC115F-F |
| | <ON>-OFF-<ON> | TC115G-F |
| | ON-OFF-<ON> | TC115H-F |
| 2-pole | ON-OFF | TC215K-F |
| | ON-ON | TC215N-F |
| | ON-OFF-ON | TC215P-F |
| | ON-<ON> | TC215R-F |
| | <ON>-OFF-<ON> | TC215S-F |
| | ON-OFF-<ON> | TC215T-F |

Remarks: 1. Standard installation accessories are included with the product.

2. 600 V vinyl wire (VSF, thick: 2 mm², length: 200 mm) is used. Please inquire about type and different length of lead wire.

5. Accessories

1) Installation accessories (Repair parts)

| Product name | Standard installation accessories | | | | Optional installation accessories |
|--------------------|---|---|---|---|---|
| | Front hex nut (Nickel plated) | Back hex nut (Uni-chrome plated) | Keying washer | Lock washer | Front Knurl nut (Nickel plated) |
| Dimensions (mm) |  |  |  |  |  |
| Part No. | AJ3081 | AJ3082 | AJ3083 | AJ3084 | AJ3080 |

Remark: A selling unit of each accessory is 10 pieces.

• Using the different rubber caps

We recommend silicon rubber and EP rubber caps for the following applications.

1) Silicon rubber caps

- When it is necessary to differentiate by color.
- When using in applications that require resistance to heat and cold. Ambient temperature: -25°C to +85°C (EP rubber type is 0°C to +40°C.)
- When compactness is required.

2) EP rubber type

When cost is the primary consideration.

2) Accessories (Option)

| Product name | Indication plate (aluminum)*3 | | Rubber cap*1, 2, 4 | |
|-----------------|-------------------------------|--------|--------------------|----------------------|
| | ON-OFF | ON-ON | EP rubber type | Silicone rubber type |
| Dimensions (mm) | | | | |
| Part No. | WD1901 | WD1902 | WD1911 | WD1811* |

Remarks: 1. The asterisk in the part number WD1811* for the silicon rubber type rubber cap is where the letter representing the color should be inserted.

(B: black; R: red; Z: grey; Y: yellow; G: green.)

2. EP rubber cap is available in black only.

3. Letters on the display panel are aluminum colored and the area surrounding the letters is black.

4. Indication plate and rubber cap are compatible with the T-15 series switch, T-10 series switch, and T-03/T-06 series switches (when plate thickness is 2.7 mm or less).

ROCKER PRODUCT TYPES



1. Standard type

1) Solder terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TR115A-*F |
| | ON-ON | TR115D-*F |
| | ON-OFF-ON | TR115E-*F |
| | ON-<ON> | TR115F-*F |
| | <ON>-OFF-<ON> | TR115G-*F |
| | ON-OFF-<ON> | TR115H-*F |
| 2-pole | ON-OFF | TR215K-*F |
| | ON-ON | TR215N-*F |
| | ON-OFF-ON | TR215P-*F |
| | ON-<ON> | TR215R-*F |
| | <ON>-OFF-<ON> | TR215S-*F |
| | ON-OFF-<ON> | TR215T-*F |

2) Screw terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TR115A-S*F |
| | ON-ON | TR115D-S*F |
| | ON-OFF-ON | TR115E-S*F |
| | ON-<ON> | TR115F-S*F |
| | <ON>-OFF-<ON> | TR115G-S*F |
| | ON-OFF-<ON> | TR115H-S*F |
| 2-pole | ON-OFF | TR215K-S*F |
| | ON-ON | TR215N-S*F |
| | ON-OFF-ON | TR215P-S*F |
| | ON-<ON> | TR215R-S*F |
| | <ON>-OFF-<ON> | TR215S-S*F |
| | ON-OFF-<ON> | TR215T-S*F |

3) Solder terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TR115A-*F |
| 2-pole | ON-OFF | TR215K-*F |

Remark: Please specify the actuator color by replacing the asterisk in the product number with appropriate letter. (B: black; W: white; R: red; Z: dark grey)

4) Screw terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TR115A-S*F |
| 2-pole | ON-OFF | TR215K-S*F |

Remark: Please specify the actuator color by replacing the asterisk in the product number with appropriate letter. (B: black; W: white; R: red; Z: dark grey)

2. Panel-sealed type

1) Solder terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRP115A-*F |
| | ON-ON | TRP115D-*F |
| | ON-OFF-ON | TRP115E-*F |
| | ON-<ON> | TRP115F-*F |
| | <ON>-OFF-<ON> | TRP115G-*F |
| | ON-OFF-<ON> | TRP115H-*F |
| 2-pole | ON-OFF | TRP215K-*F |
| | ON-ON | TRP215N-*F |
| | ON-OFF-ON | TRP215P-*F |
| | ON-<ON> | TRP215R-*F |
| | <ON>-OFF-<ON> | TRP215S-*F |
| | ON-OFF-<ON> | TRP215T-*F |

2) Screw terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRP115A-S*F |
| | ON-ON | TRP115D-S*F |
| | ON-OFF-ON | TRP115E-S*F |
| | ON-<ON> | TRP115F-S*F |
| | <ON>-OFF-<ON> | TRP115G-S*F |
| | ON-OFF-<ON> | TRP115H-S*F |
| 2-pole | ON-OFF | TRP215K-S*F |
| | ON-ON | TRP215N-S*F |
| | ON-OFF-ON | TRP215P-S*F |
| | ON-<ON> | TRP215R-S*F |
| | <ON>-OFF-<ON> | TRP215S-S*F |
| | ON-OFF-<ON> | TRP215T-S*F |

3) Solder terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRP115A-*1F |
| 2-pole | ON-OFF | TRP215K-*1F |

4) Screw terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRP115A-S*1F |
| 2-pole | ON-OFF | TRP215K-S*1F |

Remark: Please specify the actuator color by replacing the asterisk in the product number with appropriate letter. (B: black; W: white; R: red; Z: dark grey)

3. Terminal-sealed type

1) Solder terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRD115A-*F |
| | ON-ON | TRD115D-*F |
| | ON-OFF-ON | TRD115E-*F |
| | ON-<ON> | TRD115F-*F |
| | <ON>-OFF-<ON> | TRD115G-*F |
| | ON-OFF-<ON> | TRD115H-*F |
| 2-pole | ON-OFF | TRD215K-*F |
| | ON-ON | TRD215N-*F |
| | ON-OFF-ON | TRD215P-*F |
| | ON-<ON> | TRD215R-*F |
| | <ON>-OFF-<ON> | TRD215S-*F |
| | ON-OFF-<ON> | TRD215T-*F |

2) Screw terminal, without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRD115A-S*F |
| | ON-ON | TRD115D-S*F |
| | ON-OFF-ON | TRD115E-S*F |
| | ON-<ON> | TRD115F-S*F |
| | <ON>-OFF-<ON> | TRD115G-S*F |
| | ON-OFF-<ON> | TRD115H-S*F |
| 2-pole | ON-OFF | TRD215K-S*F |
| | ON-ON | TRD215N-S*F |
| | ON-OFF-ON | TRD215P-S*F |
| | ON-<ON> | TRD215R-S*F |
| | <ON>-OFF-<ON> | TRD215S-S*F |
| | ON-OFF-<ON> | TRD215T-S*F |

3) Solder terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Solder terminal |
|-----------------|--|-----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRD115A-*1F |
| 2-pole | ON-OFF | TRD215K-*1F |

4) Screw terminal, with ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Screw terminal |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRD115A-S*1F |
| 2-pole | ON-OFF | TRD215K-S*1F |

Remark: Please specify the actuator color by replacing the asterisk in the product number with appropriate letter. (B: black; W: white; R: red; Z: dark grey)

4. Wire lead type

1) Without indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Wire lead type |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRC115A-*F |
| | ON-ON | TRC115D-*F |
| | ON-OFF-ON | TRC115E-*F |
| | ON-<ON> | TRC115F-*F |
| | <ON>-OFF-<ON> | TRC115G-*F |
| | ON-OFF-<ON> | TRC115H-*F |
| 2-pole | ON-OFF | TRC215K-*F |
| | ON-ON | TRC215N-*F |
| | ON-OFF-ON | TRC215P-*F |
| | ON-<ON> | TRC215R-*F |
| | <ON>-OFF-<ON> | TRC215S-*F |
| | ON-OFF-<ON> | TRC215T-*F |

2) With ON-OFF indication on actuator

| Number of poles | Kind of operation < >: Momentary position | Wire lead type |
|-----------------|--|----------------|
| | | Product No. |
| 1-pole | ON-OFF | TRC115A-*1F |
| 2-pole | ON-OFF | TRC215K-*1F |

Remarks: 1. Please specify the actuator color by replacing the asterisk in the product number with appropriate letter. (B: black; W: white; R: red; Z: dark grey)
 2. 600 V vinyl wire (VSF, thick: 2 mm², length: 200 mm) is used. Please inquire about type and different length of lead wire.

PUSH-BUTTON PRODUCT TYPES



1. Standard type

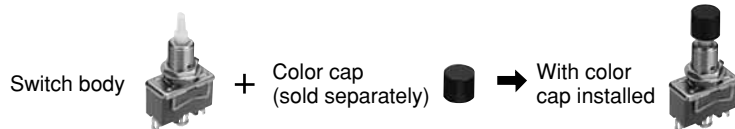
1) Solder terminal

| Number of poles | Kind of operation | Solder terminal |
|-----------------|-------------------|-----------------|
| | | Product No. |
| 1-pole | Momentary | TB110F-F |
| | Alternate | TB115D-F |
| 2-pole | Momentary | TB210R-F |
| | Alternate | TB215N-F |

2) Screw terminal

| Number of poles | Kind of operation | Screw terminal |
|-----------------|-------------------|----------------|
| | | Product No. |
| 1-pole | Momentary | TB110F-SF |
| | Alternate | TB115D-SF |
| 2-pole | Momentary | TB210R-SF |
| | Alternate | TB215N-SF |

Remarks: 1. Please use switch body with a color cap (sold separately).
 2. Standard installation accessories are included with the product.



2. Panel-sealed type

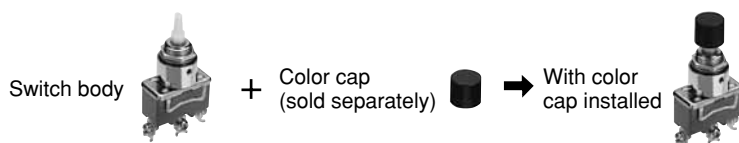
1) Solder terminal

| Number of poles | Kind of operation | Solder terminal |
|-----------------|-------------------|-----------------|
| | | Product No. |
| 1-pole | Momentary | TBP110F-F |
| | Alternate | TBP115D-F |
| 2-pole | Momentary | TBP210R-F |
| | Alternate | TBP215N-F |

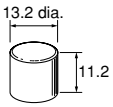
2) Screw terminal

| Number of poles | Kind of operation | Screw terminal |
|-----------------|-------------------|----------------|
| | | Product No. |
| 1-pole | Momentary | TBP110F-SF |
| | Alternate | TBP115D-SF |
| 2-pole | Momentary | TBP210R-SF |
| | Alternate | TBP215N-SF |

Remarks: 1. Please use switch body with a color cap (sold separately).
2. Standard installation accessories are included with the product.

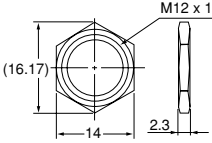
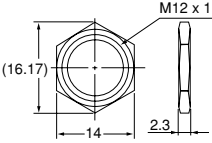
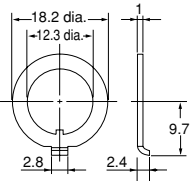
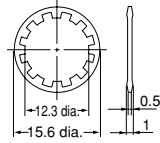
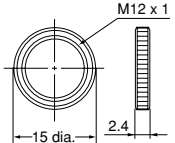


3. Color cap for push-button (Option)

| Product name | Color cap (sold separately) |
|--------------------|--|
| Dimensions (mm) |  |
| Part No. | WDB1821* |

Remark: Please specify the color cap color by replacing the asterisk in the part number with appropriate letter
(B: black; W: white; R: red; Z: dark grey; H: light grey; Y: yellow; G: green; L: blue).

4. Installation accessories (Repair parts)

| Product name | Standard installation accessories | | | | Optional installation accessories |
|--------------------|---|---|--|---|---|
| | Front hex nut (Nickel plated) | Back hex nut (Uni-chrome plated) | Keying washer | Lock washer | Front Knurl nut (Nickel plated) |
| Dimensions (mm) |  |  |  |  |  |
| Part No. | AJ3081 | AJ3082 | AJ3083 | AJ3084 | AJ3080 |

Remark: A selling unit of each accessory is 10 pieces.

SPECIFICATIONS

1. Contact rating

1) Toggle type and Rocker type

| Kind of load | AC | DC |
|-----------------------------|--|--|
| Resistive load | 15A 250V | 0.5A 250V, 0.9A 125V, 15A 30V |
| Inductive load | 15A 250V (Power factor: 0.6) | 0.3A 250V (Time constant: 8 ms), 0.5A 125V (Time constant: 8 ms) 15A 30V (Time constant: 8 ms) |
| Lamp load (incandescent) | 400W 100V, 800W 200V, Inrush current: Max. 40 A | 7A 30V |
| Motor load | 400 W 125 V (single phase), 550 W 250 V (single phase), 750 W 250 V (three-phase) | — |

2) Push-button type (momentary)

| Kind of load | AC | DC |
|----------------|----------|------------------------------|
| Resistive load | 10A 250V | 0.4A 250V, 0.8A 125V, 8A 30V |

3) Push-button type (alternate)

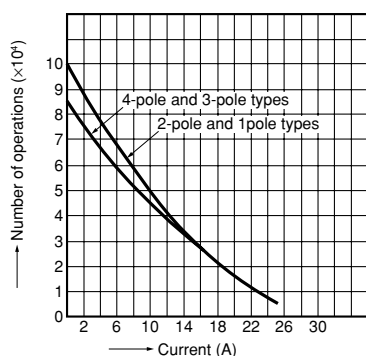
| Kind of load | AC | DC |
|----------------|----------|-------------------------------|
| Resistive load | 15A 250V | 0.5A 250V, 0.9A 125V, 15A 30V |

2. Characteristics

| Shape of actuator | Toggle type | | Rocker type | Push-button type |
|--|--|--|---|--|
| Protection grade *1: IP40 *2: IP64 *3: IP67 | Standard type (*1) | Panel-sealed type (*3) Terminal-sealed type (*3) Wire leads type (*3) | Standard type (*1) Panel-sealed type (*2) Terminal-sealed type (*2) Wire leads type (*2) | Standard type (*1) Panel-sealed type (*3) |
| Mechanical expected life | 1-pole and 2-pole: Min. 10^5 3-pole and 4-pole: Min. 8.5×10^4 | Min. 5×10^4 (20 cpm) ON-OFF, ON-ON, ON-OFF-ON, Min. 3×10^4 (20 cpm) ON-(ON), (ON)-OFF-(ON), ON-OFF-(ON) | Min. 3×10^4 (20 cpm) | |
| Electrical expected life (10 cpm) | Standard and panel-sealed types: Min. 3×10^4 Terminal-sealed and wire leads types: Min. 1.5×10^4 | | Standard type: Min. 3×10^4 Panel-sealed, terminal- sealed and wire leads types: Min. 10^4 | Min. 10^4 |
| Dielectric strength | 1500 Vrms (at detection current: 10mA) | | | |
| Insulation resistance | Min. 100 MΩ (at 500 V DC measured by insulation resistive meter) | | | |
| Contact resistance | Initial, Max. 10 mΩ (By voltage drop at 1 A, 2 to 4 V DC) Wire leads type only: Initial, Max. 30 mΩ (By voltage drop at 1 A, 2 to 4 V DC) | | | |
| Actuator strength | 112.7N for 1 min. (For operating direction) | | | |
| Vibration resistance | 10 to 55 Hz at double amplitude of 1.5 mm (contact opening: Max. 10 ms) | | | |
| Terminal strength (static load) | 24.5N for 1 min. | | | |
| Ambient temperature | -25°C to +70°C (Not freezing below 0°C) | | | |
| Contact material | AgZnO alloy | | | |

DATA (Electrical life, For toggle standard type)

Tested condition: 250 V AC, Power factor: 0.6 and 10 cpm



TOGGLE TYPE DIMENSIONS

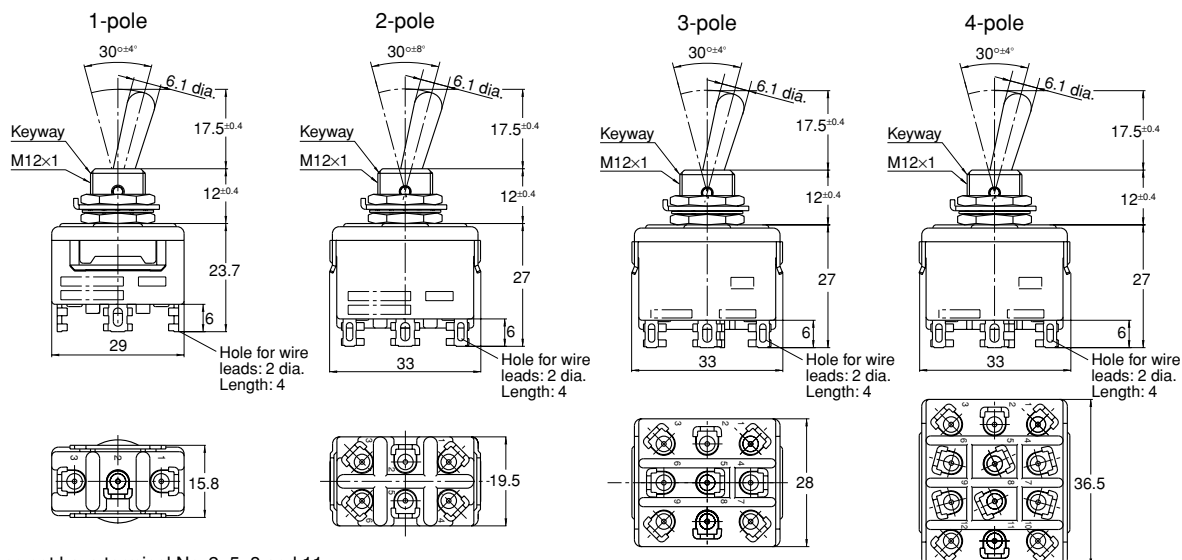
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

mm General tolerance: ± 0.5

1. Standard type

1) Solder terminal

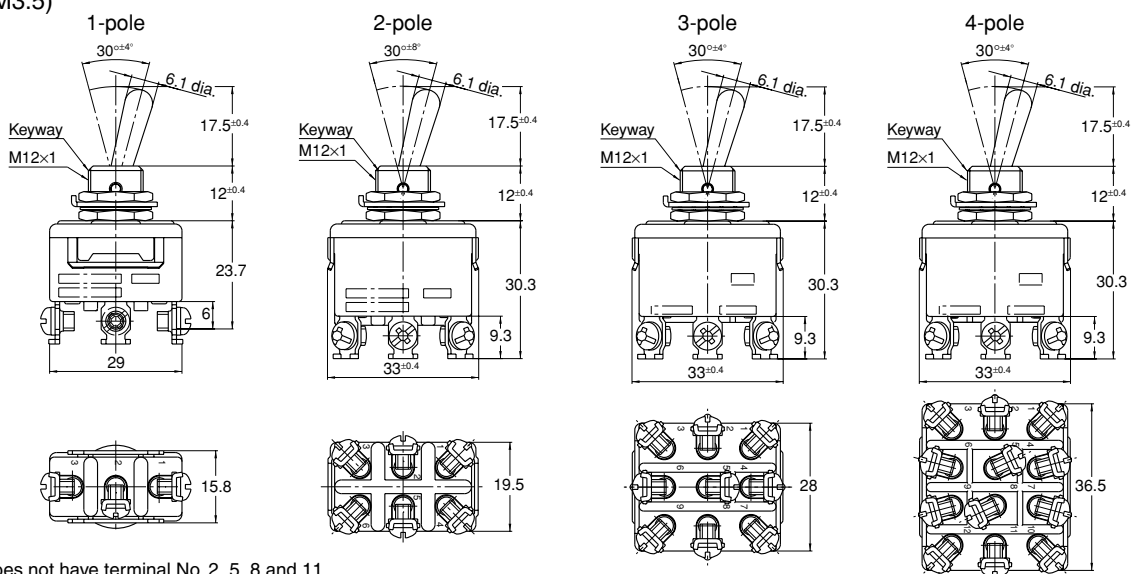
CAD Data



Remark: ON-OFF type does not have terminal No. 2, 5, 8 and 11.

2) Screw terminal (M3.5)

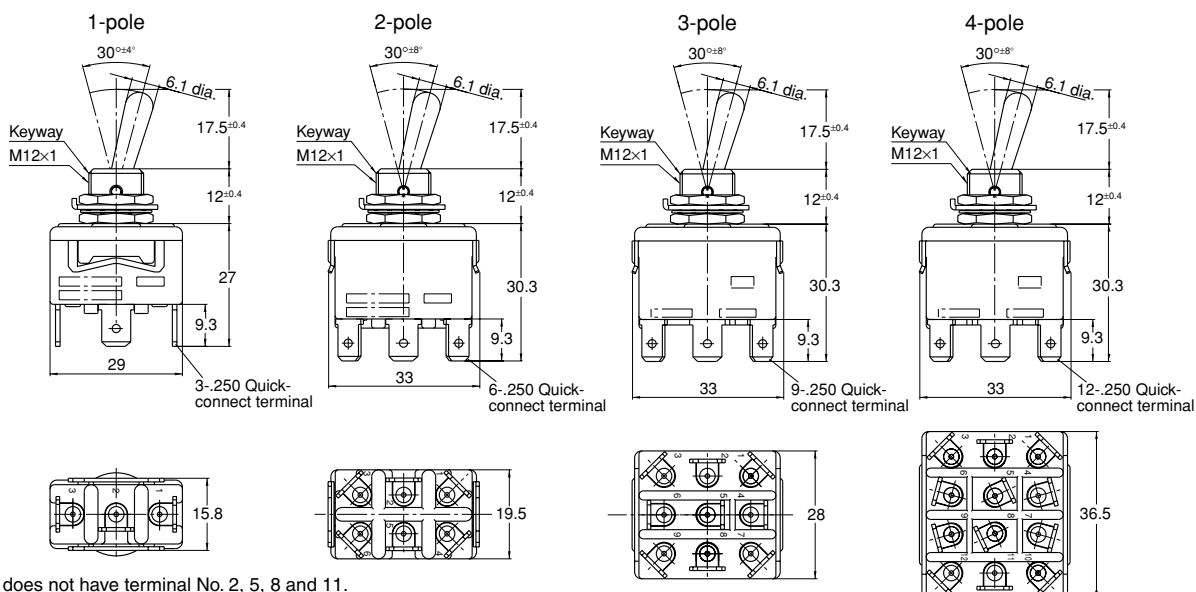
CAD Data



Remark: ON-OFF type does not have terminal No. 2, 5, 8 and 11.

3) .250 Quick-connect terminal

CAD Data

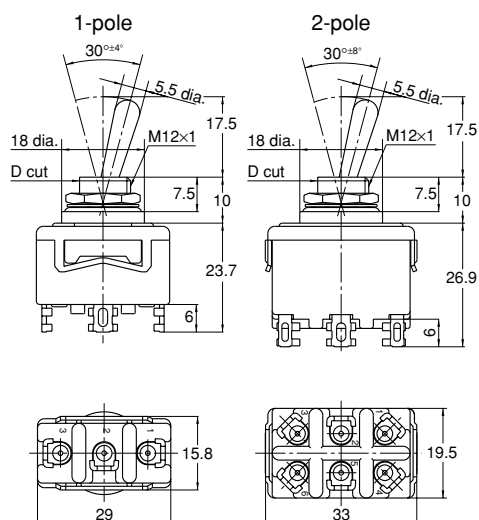


Remark: 1. ON-OFF type does not have terminal No. 2, 5, 8 and 11.
2. There is no through-hole on .250 Quick-connect terminals.

2. Panel-sealed type

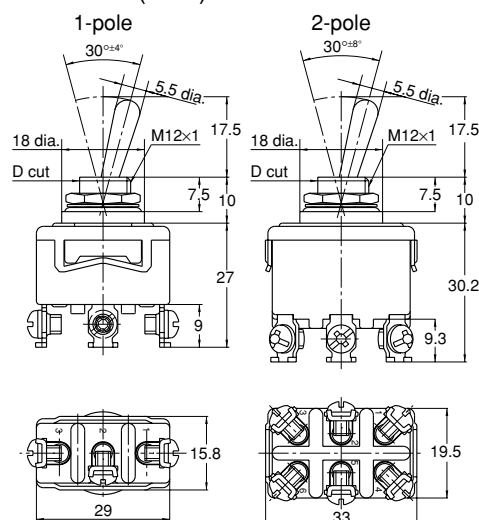
1) Solder terminal

CAD Data



Remark: ON-OFF type does not have terminal No. 2 and 5.

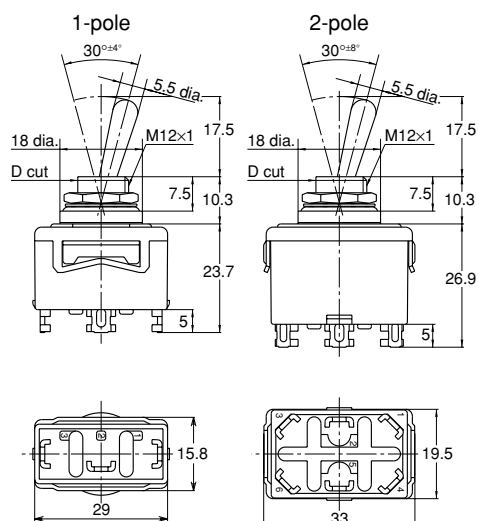
2) Screw terminal (M3.5)



3. Terminal-sealed type

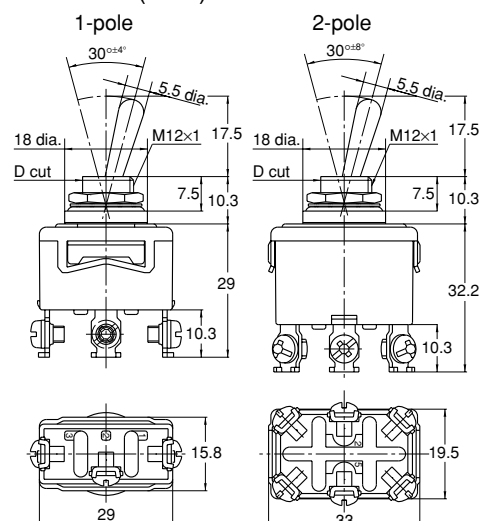
1) Solder terminal

CAD Data



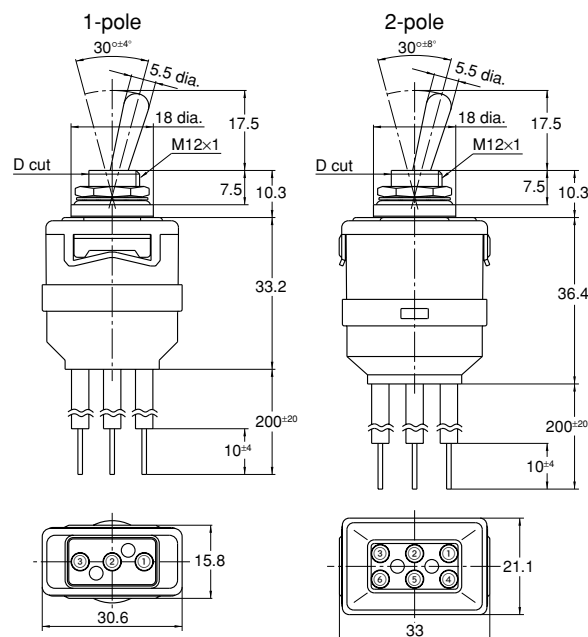
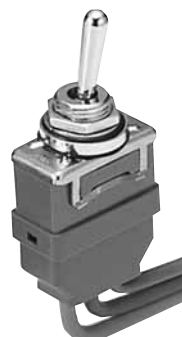
Remark: ON-OFF type does not have terminal No. 2 and 5.

2) Screw terminal (M3.5)



4. Wire leads type

CAD Data



Remarks: 1. ON-OFF type does not have wire lead No. 2 and 5.
2. 600 V vinyl wire (VSF, thick: 2 mm², length: 200 mm) is used. Please inquire about type and different length of lead wire.

Color of wire leads

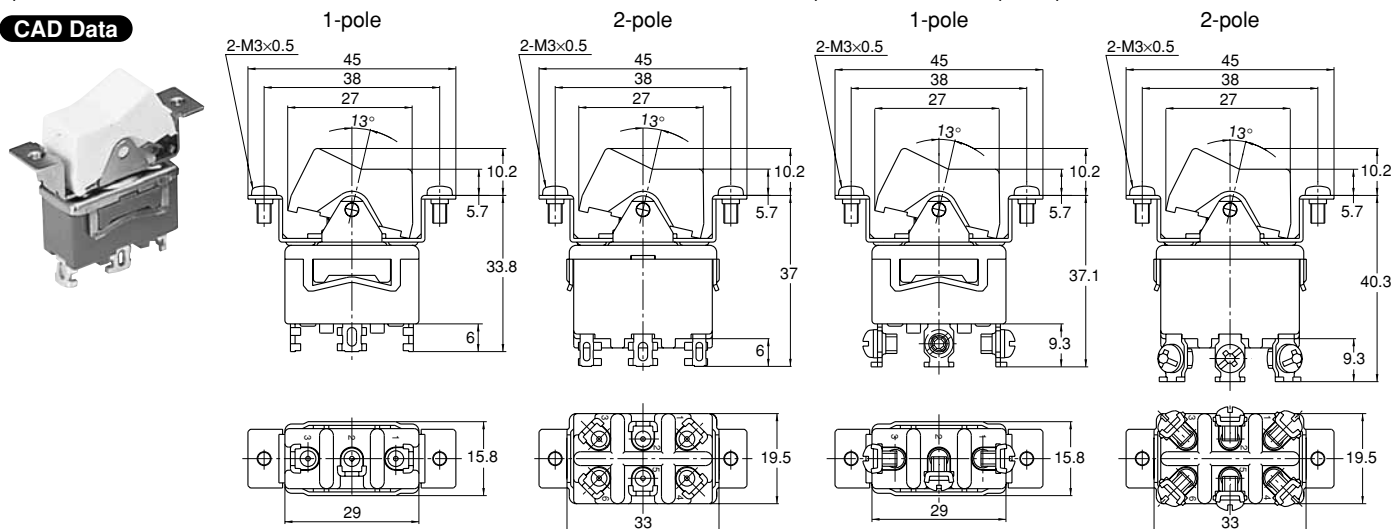
| No. | Color |
|-----|--------|
| ① | Brown |
| ② | Red |
| ③ | Orange |
| ④ | Yellow |
| ⑤ | Green |
| ⑥ | Blue |

ROCKER TYPE DIMENSIONS (mm) (General tolerance: ± 0.5)

1. Standard type

1) Solder terminal

CAD Data



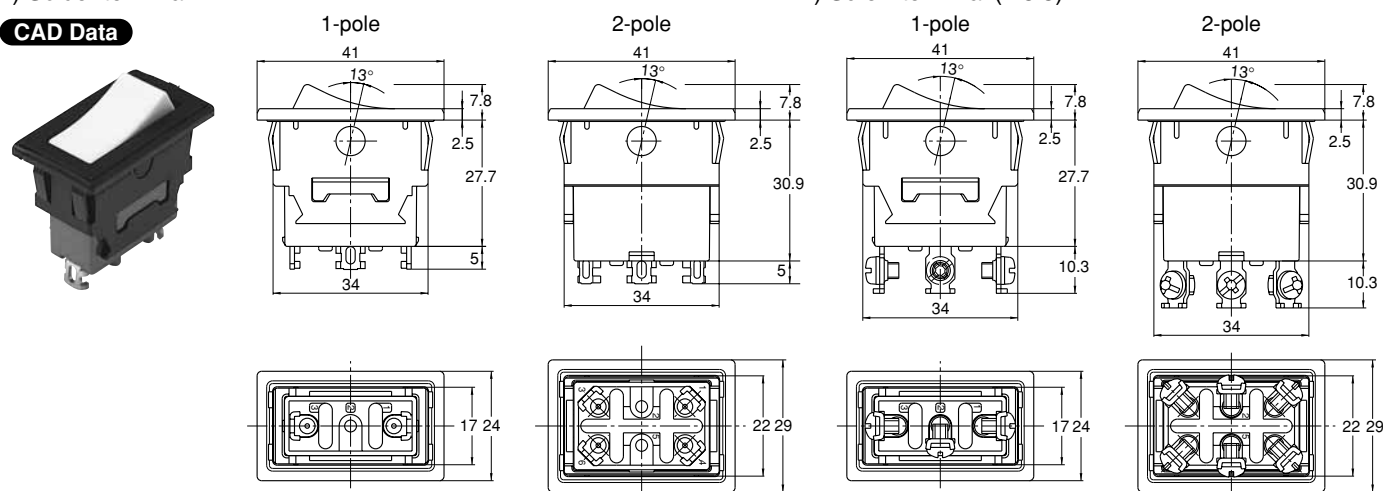
Remarks: 1. ON-OFF type does not have terminal No. 2 and 5.

2. Dimensions of actuator: 13.4×27

2. Panel-sealed type

1) Solder terminal

CAD Data



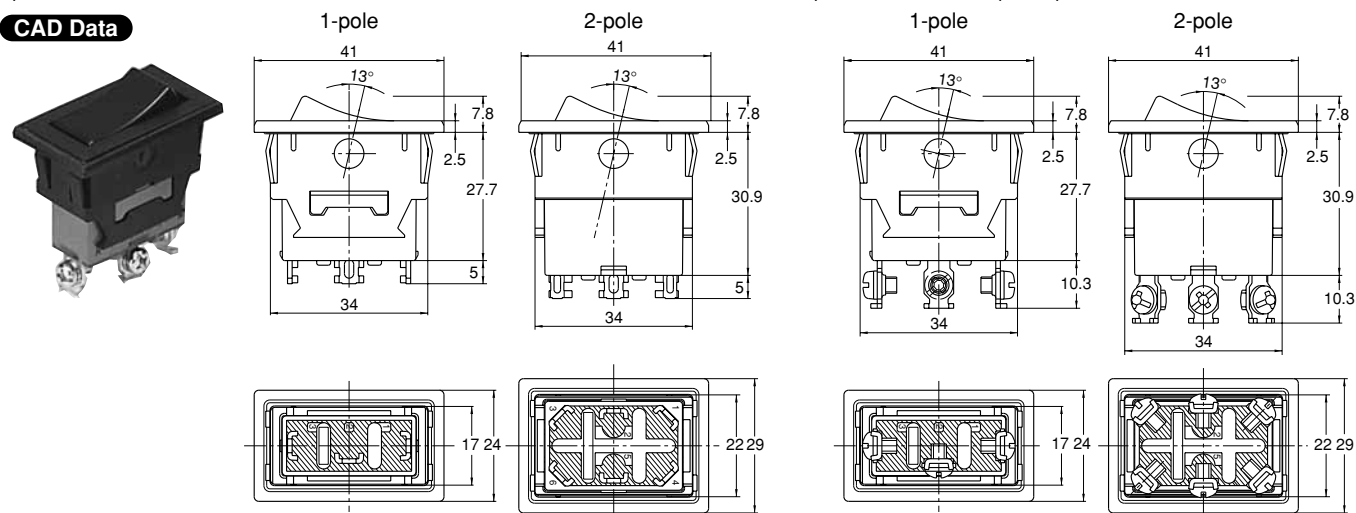
Remarks: 1. ON-OFF type does not have terminal No. 2 and 5.

2. Dimensions of actuator: 1-pole: 12.6×29 , 2-pole: 17.4×29

3. Terminal-sealed type

1) Solder terminal

CAD Data



Remarks: 1. ON-OFF type does not have terminal No. 2 and 5.

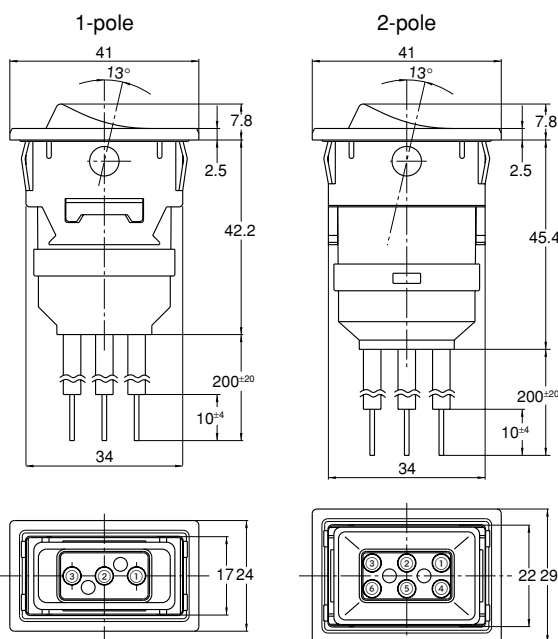
2. Dimensions of actuator: 1-pole: 12.6×29 , 2-pole: 17.4×29

4. Wire leads type

CAD Data



Remarks: 1. ON-OFF type does not have terminal No. 2 and 5.
 2. Dimensions of actuator: 1-pole: 12.6 × 29, 2-pole: 17.4 × 29
 3. 600 V vinyl wire (VSF, thick: 2 mm², length: 200 mm) is used. Please inquire about type and different length of lead wire.



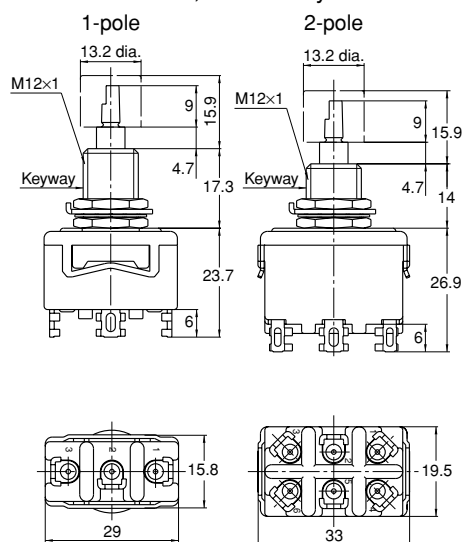
Color of wire leads

| No. | Color |
|-----|--------|
| ① | Brown |
| ② | Red |
| ③ | Orange |
| ④ | Yellow |
| ⑤ | Green |
| ⑥ | Blue |

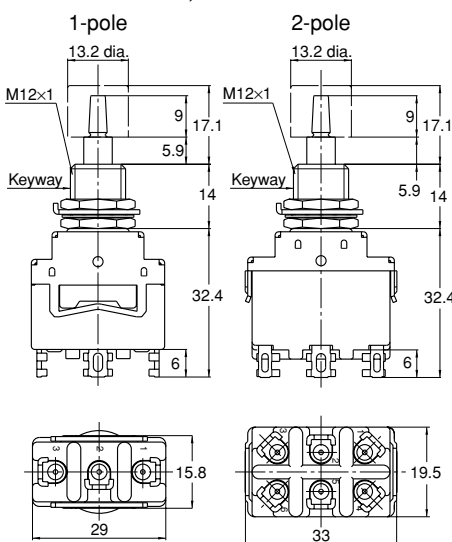
PUSH-BUTTON TYPE DIMENSIONS (mm) (General tolerance: ±0.5)

1. Standard type

• Solder terminal, Momentary

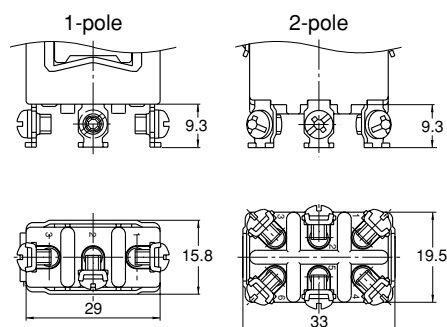


• Solder terminal, Alternate



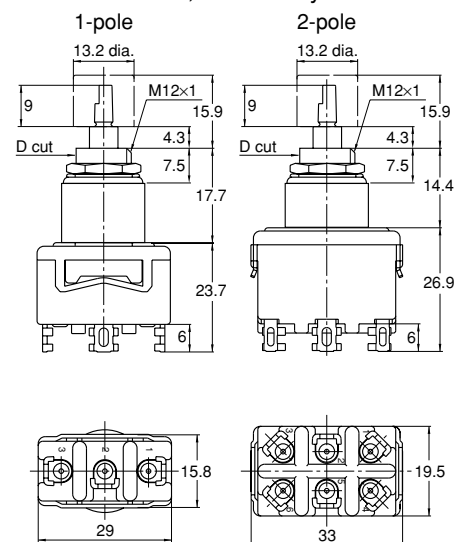
• Screw terminal (M3.5)

Dimensions other than listed below are same as those of solder terminal type.

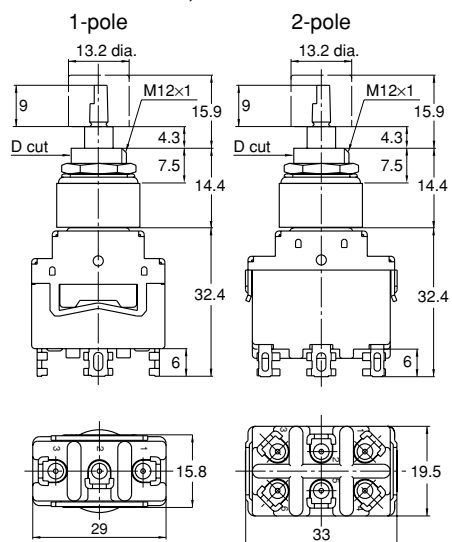


2. Panel-sealed type

• Solder terminal, Momentary

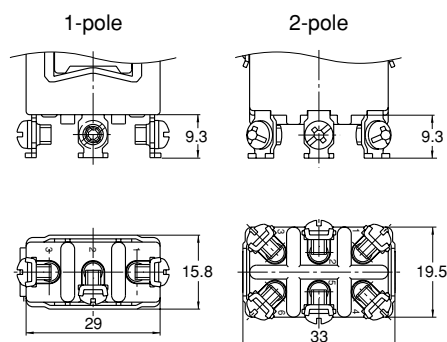


• Solder terminal, Alternate



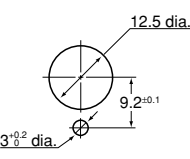
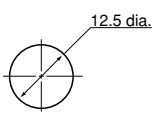
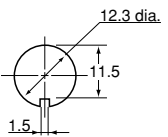
• Screw terminal (M3.5)

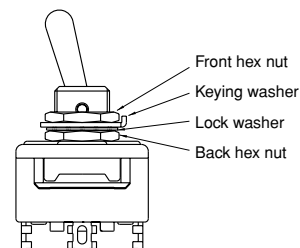
Dimensions other than listed below are same as those of solder terminal type.

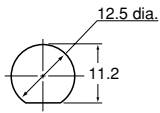
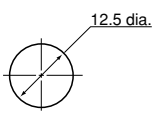


MOUNTING DIMENSIONS

1. Toggle type

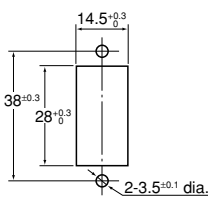

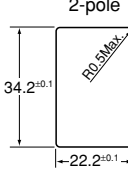
| Type | Standard type | | |
|-------------------|---|---|--|
| Panel cutout (mm) |  |  |  |
| Panel thickness | Max. 4.6 mm | Max. 5.6 mm (without keying washer) | Max. 5.6 mm (without keying washer) |



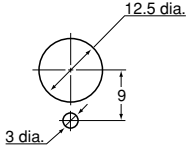
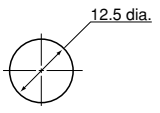
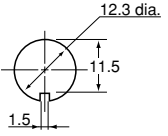
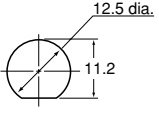
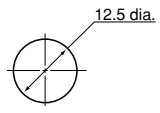
| Type | Panel-sealed, Terminal-sealed and Wire leads types | |
|-------------------|---|---|
| Panel cutout (mm) |  |  |
| Panel thickness | Max. 4 mm | Max. 4 mm (without keying washer) |

Remark: For panel installations of standard type, be use to use the back hex nut.

2. Rocker type

| Type | Standard type | Panel-sealed, Terminal-sealed and Wire leads types | |
|-------------------|--|---|--|
| Panel cutout (mm) |  | <p>1 pole</p>  | <p>2-pole</p>  |
| Panel thickness | Max. 4.5 mm | 1.2 to 3.2 mm | |















3. Push-button type

| Type | Standard type | | | Panel-sealed type | |
|-------------------|---|--|--|---|---|
| Panel cutout (mm) |  |  |  |  |  |
| Panel thickness | Momentary, 1-pole: Max. 10 mm Momentary, 2-pole: Max. 6.5 mm Alternate: Max. 6.5 mm | Momentary, 1-pole: Max. 10 mm Momentary, 2-pole: Max. 7.5 mm Alternate: Max. 7.5 mm (without keying washer) | Momentary, 1-pole: Max. 11 mm Momentary, 2-pole: Max. 7.5 mm Alternate: Max. 7.5 mm (without keying washer) | Max. 4 mm | Max. 4 mm (without keying washer) |

Remark: For panel installations of standard type, be use to use the back hex nut.

ELECTRICAL CIRCUIT DIAGRAM

1. Toggle type and Rocker type

| Number of pole | | | | 1-pole | 2-pole | 3-pole | 4-pole | |
|--|---|--|--|--|--|--|---|--|
| Toggle type | | | | Available | Available | Available *3 | Available *3 | |
| Rocker type | | | | Available | Available | — | — | |
| Terminal arrangement (As seen from terminal side) | | | | <div><div>1 — 2 — 3 —</div><div>Keyway</div></div> | <div><div>1 — 4 — 2 — 5 — 3 — 6 —</div><div>Keyway</div></div> | <div><div>1 — 4 — 7 — 2 — 5 — 8 — 3 — 6 — 9 —</div><div>Keyway</div></div> | <div><div>1 — 4 — 7 — 10 — 2 — 5 — 8 — 11 — 3 — 6 — 9 — 12 —</div><div>Keyway</div></div> | |
| Actuator position and contact terminal number | Actuator shape | Toggle type | Rocker type | | | | | |
| | ON-OFF |  Keyway | Right Part No.  | 1-3 | 1-3, 4-6 | 1-3, 4-6, 7-9 | 1-3, 4-6, 7-9, 10-12 | |
| | | — | — | — | — | — | — | |
| | |  Keyway | Left  | — | — | — | — | |
| | ON-ON ON-<ON> *1 |  Keyway | Right Part No.  | 2-3 | 2-3, 5-6 | 2-3, 5-6, 8-9 | 2-3, 5-6, 8-9, 11-12 | |
| | | — | — | — | — | — | — | |
| | |  Keyway | Left  *2 | 1-2 | 1-2, 4-5 | 1-2, 4-5, 7-8 | 1-2, 4-5, 7-8, 10-11 | |
| | ON-OFF-ON <ON>-OFF-<ON> ON-OFF-<ON> *1 |  Keyway | Right Part No.  | 2-3 | 2-3, 5-6 | 2-3, 5-6, 8-9 | 2-3, 5-6, 8-9, 11-12 | |
| | |  Keyway | Center  | — | — | — | — | |
| | |  Keyway | Left  *2 | 1-2 | 1-2, 4-5 | 1-2, 4-5, 7-8 | 1-2, 4-5, 7-8, 10-11 | |
| | Remarks | | | | ON-OFF type does not have a terminal No. 2. | ON-OFF type does not have terminal No. 2 and 5. | ON-OFF type does not have terminal No. 2, 5 and 8. | ON-OFF type does not have terminal No. 2, 5, 8 and 11. |

Remarks: *1. For ON-<ON>, ON-OFF-<ON> type of toggle, if the lever turns to the keyway side, it takes momentary position.

*2. For the rocker type, if the actuator turns to the left side in view of the side where a part number is marked, it takes momentary position.

*3. Only standard type

2. Push-button type

| | | 1-pole | 2-pole |
|--|--------------|--------|----------|
| Terminal arrangement (As seen from terminal side) | | | |
| Push-button position and contact terminal number | | 2-3 | 2-3, 5-6 |
| | Operated | 1-2 | 1-2, 4-5 |

NOTES

1. Dustproof, waterproof, anticorrosive gas, and oil-proof designs

The panel-sealed type/terminal-sealed type/wire lead type switch has a protection level of IP67 on the outer side of the mounting panel and a level of IP40, IP60, or IP67 on the inner side of the panel.

For actual application, note the following points:

1) Avoid immersion in water or oil during installation.

2) Avoid immersion in water or oil during operation.

3) Oils or gases impose varying degrees of impact on the switch's sealing performance depending on type or quantity.

4) While the switch has a immersion and dust-protected design, its sealing performance or operability may be adversely affected in an environment where in the switch's movable parts can be contaminated with dust, oil, or other foreign objects. For the toggle type, use of a rubber cap is recommended.

5) The standard toggle switch, when used with a rubber cap, provides a protection level of IP54.

It should be used in an environment where it will not be subject to frequent water splashes.

6) As the sealing performance of the rocker type switch is affected by the panel processing accuracy or mounted panel thickness, check the switch under actual loading conditions. (While water or dust will not enter the switch's internal structure, it may enter the panel.)

7) Do not operate the rocker type switch when water accumulates in the actuator.

2. Installation

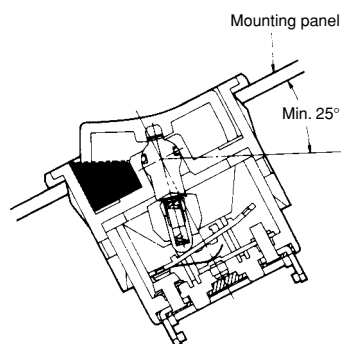
1) For the toggle and push-button type
a. When installing the standard type switch, be sure to use a hex nut.

b. For the panel-sealed, terminal-sealed and wire lead types, use a lock washer on the front side of the panel, and an O-ring on the back side of it.

c. Do not install the switch by rotating it.

2) For the rocker type

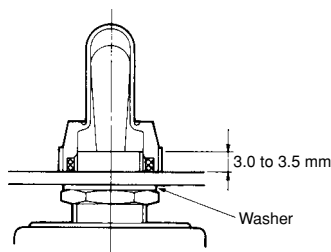
a. In case the panel-sealed, terminal-sealed or wire leads types are used in the condition where the water splash on, please install the switches tilt more than 25°. (90° recommended)



b. In case water inside the switch case may freeze, please install the switch vertically to avoid the water remain inside the switch.

3) Rubber cap installation

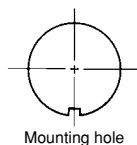
a. The washer should be used on the back side of the panel.



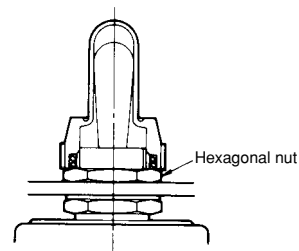
b. Enough screw pitch should be obtained being adjusted within 3 to 3.5mm (See figure above.)

c. Install a rubber cap on the switch knob before securing the switch with the hex nut.

d. The mounting hole in the panel should preferably be provided with an anti-rotation projection.



e. If the rubber cap is installed over the hex nut, the waterproof performance will be impaired although the dustproof performance will not be affected.



3. Soldering

1) By using 350°C soldering iron, soldering should be completed within 5 seconds.

2) Exercise care so as not to touch the switch body with a soldering iron.

4. Load type and ratings

1) When the switch is loaded with a lamp, motor or capacitive load, a surge current higher than the stationary current passes through the switch contacts.

Measure the surge with the actual load and, if needed, take necessary action so that the surge will not exceed the switch's rated current.

2) When the switch is loaded with an inductive load (relay, solenoid, buzzer, etc.), a contact failure may result from arc discharge caused by a counterelectromotive force. It is advisable that you use an adequate anti-spark circuit across the switch contacts.

5. Others

1) Do not apply an excessive static load exceeding 112.7N {11.5kgf} perpendicular to the direction of operation.

2) Operate the switch knob by hand.

3) Take care not to drop the product as it may impair performance.