## Separate Construction with Cylindrical

## 16-dia. Body

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


Refer to Safety Precautions for All Pushbutton Switches/ Indicators and Safety Precautions on page 15.

List of Models

|  | Model |  |  |
| :---: | :---: | :---: | :---: |
|  | Rectangular | Square | Round |
| Solder terminals | A165 $\square$-J Series | A165 $\square$-A Series | A165 $\square$-T Series |
| Voltagereduction lighting |  | A165 $\square$-A Series |  |
| Screwless clamp connector | A165 $\square$-J Series | A165 $\square$-A Series | A165 $\square$-T Series |

## Model Number Structure

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

(6) Contact Configuration

| Symbol | Type | Terminal |
| :---: | :---: | :---: |
| 1 | SPDT | Solder terminal |
| 2 | DPDT |  |
| 1 P | SPDT | PCB terminal |
| 2 P | DPDT |  |
| 2 S | DPDT | Screw-less Clamp |
| Note: 1. Only DPDT contacts are available with |  |  |
| 3-notch models and Screw-less Clamp <br> models. <br> 2. PCB terminals are available only with <br> 2-notch models. |  |  |

(5) Light Source

| Symbol | Type |
| :---: | :---: |
| No symbol | Non-lighted |
| 24 D | $24-\mathrm{V}$ LED |

Voltage Reduction Unit (24-V Built-in LED)

| Symbol | Type | Operating voltage | Rated voltage |
| :---: | :---: | :---: | :---: |
| T1 | LED | $100 / 110$ VAC/VDC | 110 VAC/VDC |
| T2 |  | $200 / 220$ VAC/VDC | 220 VAC/VDC |

Note: 1. Solder terminals are only available with $100-\mathrm{V}$ models.
2. The Voltage Reduction Unit is not available for models with

PCB terminals.
3. "T2" is available only for the Screw-less Clamp type.

## Ordering Information

Ordering as a Set .................The model numbers used to order sets of Units are given in the following tables. One set comprises the Selector, Lamp (lighted models only), and Switch.

## Solder Terminals

| Rectangular | A165 $\square$-J |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| No. of notches | Output | Reset method | Lighting method | Model |
| 2 notches | SPDT | Manual V | LED | A165W-J2M $\square$-24D-1 |
|  |  |  | Non-lighted | A165S-J2M-1 |
|  |  | Automatic $\triangleright$ | LED | A165W-J2A $\square$-24D-1 |
|  |  |  | Non-lighted | A165S-J2A-1 |
|  | DPDT | Manual V | LED | A165W-J2M $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-J2M-2 |
|  |  | Automatic $\triangleright$ | LED | A165W-J2A $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-J2A-2 |
| 3 notches | DPDT | Manual $\downarrow$ | LED | A165W-J3M $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-J3M-2 |

Note: Enter the desired color symbol for the Selector in $\square: \mathrm{R}$ (red); Y (yellow); G (green). The Selector for non-lighted models is black.

| Square Oil-resistant IP65 | A165 $\square$-A |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| No. of notches | Output | Reset method | Lighting method | Model |
| 2 notches | SPDT | Manual V | LED | A165W-A2M $\square$-24D-1 |
|  |  |  | Non-lighted | A165S-A2M-1 |
|  |  | Automatic $\triangleright$ | LED | A165W-A2A $\square$-24D-1 |
|  |  |  | Non-lighted | A165S-A2A-1 |
|  | DPDT | Manual V | LED | A165W-A2M $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-A2M-2 |
|  |  | Automatic $\triangleright$ | LED | A165W-A2A $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-A2A-2 |
| 3 notches | DPDT | Manual $\downarrow$ | LED | A165W-A3M $\square$-24D-2 |
|  |  |  | Non-lighted | A165S-A3M-2 |

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


[^0]
## Ordering Information

Ordering Individually ......... Selectors, Lamps, 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.


## Ordering Information

Ordering Individually
........ Selectors, Lamps, and Switches (Sockets) can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.
Selectors (Oil-resistant IP65 Models Only)

| Appearance | Number of notches | Reset method | Lighting method | Model | Selector color symbol |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Rectangular (A165 $\square$-J) | 2 notches | Manual | LED | A165W-J2M $\square$ | Enter the desired color symbol for the Selector in $\square$. <br> R (red), <br> Y (yellow), <br> G (green) |
|  |  |  | Non-lighted | A165S-J2M |  |
|  |  | Automatic (1) | LED | A165W-J2A $\square$ |  |
|  |  |  | Non-lighted | A165S-J2A |  |
|  | 3 notches | Manual | LED | A165W-J3M $\square$ |  |
|  |  |  | Non-lighted | A165S-J3M |  |
|  |  | Fully automatic | LED | A165W-J3A $\square$ |  |
|  |  |  | Non-lighted | A165S-J3A |  |
| Square$(\mathrm{A} 165 \square-\mathrm{A})$ | 2 notches | Manual | LED | A165W-A2M $\square$ | Enter the desired color symbol for the Selector in $\square$. <br> $R$ (red), <br> Y (yellow), <br> G (green) |
|  |  |  | Non-lighted | A165S-A2M |  |
|  |  | Automatic (1) | LED | A165W-A2A $\square$ |  |
|  |  |  | Non-lighted | A165S-A2A |  |
|  | 3 notches | Manual | LED | A165W-A3M $\square$ |  |
|  |  |  | Non-lighted | A165S-A3M |  |
|  |  | Fully automatic | LED | A165W-A3A $\square$ |  |
|  |  |  | Non-lighted | A165S-A3A |  |
| Round$\text { (A165 } \square-\mathrm{T})$ | 2 notches | Manual | LED | A165W-T2M $\square$ | Enter the desired color symbol for the Selector in $\square$. <br> $R$ (red), <br> Y (yellow), <br> G (green) |
|  |  |  | Non-lighted | A165S-T2M |  |
|  |  | Automatic | LED | A165W-T2A $\square$ |  |
|  |  | Automatic (1) | Non-lighted | A165S-T2A |  |
|  | 3 notches | Manual | LED | A165W-T3M $\square$ |  |
|  |  |  | Non-lighted | A165S-T3M |  |
|  |  | Fully automatic | LED | A165W-T3A $\square$ |  |
|  |  |  | Non-lighted | A165S-T3A |  |

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

## Ordering Information

Sets . Select an Operation Unit and a Switch Unit (Lamp and Switch).


Switch Units (A Switch Unit includes a Switch and a Lamp.)

| Appearance | Number of notches | Classification |  |  | Model |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2 notches | SPDT | 24 V | Solder terminals | A16W-2N $\square$-24D-1 |
|  |  | DPDT |  |  | A16W-2N $\square$-24D-2 |
|  | 3 notches | DPDT |  |  | A16W-3N $\square$-24D-2 |

Switch Units with Voltage Reduction Units (Solder Terminals)

| Appearance | Classification |  |  | Operating voltage | Model |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Standard loads and microloads | 2 notches | SPDT | 100/110 VAC/VDC | A16L- $\square$-T1-1 |
|  |  | 2 notches | DPDT |  | A16L- $\square$-T1-2 |
|  |  | 3 notches |  |  | A16W-3N $\square$-T1-2 |

Note: The LED has a 24-VAC/VDC circuit built in.
Insert one of the following letters into the box ( $\square$ ).

| Symbol | Light color |
| :---: | :---: |
| $R$ | Red |
| Y | Yellow |
| G | Green |

## Ordering Information

Switch Units with Screw-less Clamp Connectors

| Appearance | Classification |  |  |  |  | Model | Remarks <br> Used for Pushbutton Switches and Knob-type Selector Switches. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Standard loads and microloads | 2 notches DPDT | Non-lighted |  |  | A16-2S |  |
|  |  |  | Lighted | No voltage-reduction lighting |  | A16L- $\Delta-\square$-2S |  |
| $1{ }^{18}$ |  |  |  | Voltage-reduction | 100/110 VAC/VDC | A16L- $\Delta$-T1-2S |  |
|  |  |  |  | lighting | 200/220 VAC/VDC | A16L- $\Delta$-T2-2S |  |
|  |  | 3 notches DPDT | Non-lighted |  |  | A16S-3N-2LS |  |
|  |  |  | Lighted | No voltage-reduction lighting |  | A16W-3N $\Delta$ - $\square$-2S |  |
|  |  |  |  | Voltage-reduction | 100/110 VAC/VDC | A16W-3N- $\Delta$-T1-2S |  |
|  |  |  |  | lighting | 200/220 VAC/VDC | A16W-3N- $\Delta$-T2-2S |  |

Note: The 100-V models and 200-V models have a $24-\mathrm{VAC} / \mathrm{VDC}$ circuit built in.

Ordering Individually
Insert symbols in $\Delta$ and $\square$.

| $\Delta$ |  |
| :---: | :---: |
| Symbol | Light color |
| R | Red |
| Y | Yellow |
| G | Green |


| Symbol | Type | Operating voltage |
| :---: | :---: | :---: |
| 5D | LED | 5 VDC |
| 12D |  | 12 VAC/VDC |
| 24D |  | 24 VAC/VDC |

Switches

| Appearance | Classification |  |  |  |  | Model |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Lighted | Switches (without voltage-reduction lighting) | 2 notches | SPDT | Solder terminal | A16S-2N-1L |
|  |  |  |  | DPDT |  | A16S-2N-2L |
|  |  |  | 3 notches | DPDT |  | A16S-3N-2L |
|  | Non-lighted |  | 2 notches | SPDT |  | A16S-2N-1 |
|  |  |  |  | DPDT |  | A16S-2N-2 |
|  |  |  | 3 notches | DPDT |  | A16S-3N-2 |
|  | ed |  | 2 notches | SPDT | PCB terminal | A16S-2N-1LP |
|  | ed |  |  | DPDT |  | A16S-2N-2LP |
|  | Non-lighted |  |  | SPDT |  | A16S-2N-1P |
|  |  |  |  | DPDT |  | A16S-2N-2P |

## Lamps

| Operating voltage | Super-bright |  |  |
| ---: | :--- | :--- | :--- |
|  | 5 VDC |  |  |
| Red | A16-5DSR | 12 VAC/VDC | 24 VAC/VDC |
| Yellow | A16-5DSY | A16-12DSR | A16-24DSR |
| Green | A16-5DSG | A16-12DSS | A16-24DSY |

Accessories and Tools (Order Separately)
Accessories

| Name | Appearance | Classification | Model | Remarks |
| :---: | :---: | :---: | :---: | :--- |
| Panel Plugs |  | Rectangular | A16ZJ-3003 | Used for covering the panel cut- |
|  |  | Square | A16ZA-3003 | outs for future panel expansion. <br> Degree of protection: IP40 |
|  |  | 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 | 0 | A16Z-3004 | Yes | Yes | Yes | Yes | Yes | Convenient for ganged installation. Tighten to a torque of $0.39 \mathrm{~N} \cdot \mathrm{~m}$ min. |
| Extractor |  | A16Z-5080 | Yes | Yes | Yes | Yes | Yes | Convenient for extracting the Switches and Lamps. |

[^1][^2]Accessories, replacements, and tools: Refer to this page

## Specifications

## Approved Standard Ratings

UL, cUL (File No. E41515)
5 A at $125 \mathrm{VAC}, 3 \mathrm{~A}$ at 250 VAC (general use)

TÜV (EN60947-5-1) (Low Voltage Directive)
3 A at 250 VAC
3 A at 30 VDC

CCC (GB14048.5)
5 A at 125 VAC
3 A at 250 VAC
3 A at 30 VDC

Note: Certification has been obtained for the Switch.
For detailed information on individual products that
have received certification, consult your supplier.

## Ratings

Switch Ratings

| Rated voltage | Resistive load |
| :---: | :---: |
| 125 VAC | 5 A |
| 250 VAC | 3 A |
| 30 VDC | 3 A |

Minimum applicable load: 1 mA at 5 VDC
Rated values are obtained from tests conducted under the following conditions.

1. Load: Resistive load
2. Mounting conditions: No vibration and no shock
3. Temperature: $20 \pm 2^{\circ} \mathrm{C}$
4. Operating frequency: 20 times $/ \mathrm{min}$

## Characteristics

## Socket Unit

| Item Type |  | Knob-type Selector Switch |
| :---: | :---: | :---: |
| Allowable operating frequency | Mechanical | 20 operations/minute max. |
|  | Electrical | 10 operations/minute max. |
| Insulation resistance |  | $100 \mathrm{M} \Omega \mathrm{min}$. (at 500V DC) |
| Contact resistance |  | $100 \mathrm{~m} \Omega$ max. (initial value) |
| Dielectric strength | Between terminals of same polarity | 1,000 VAC, $50 / 60 \mathrm{~Hz}$ for 1 min |
|  | Between terminals of different polarity | 2,000 VAC, $50 / 60 \mathrm{~Hz}$ for 1 min |
|  | Between each terminal and ground | 2,000 VAC, $50 / 60 \mathrm{~Hz}$ for 1 min |
|  | Between lamp terminals | 1,000 VAC, $50 / 60 \mathrm{~Hz}$ for $1 \mathrm{~min}^{*}$ |
| Vibration resistance | Malfunction | 10 to $55 \mathrm{~Hz}, 1.5-\mathrm{mm}$ double amplitude (malfunction within 1 ms ) |
| Shock resistance | Destruction | $500 \mathrm{~m} / \mathrm{s}^{2} \mathrm{max}$. |
|  | Malfunction | $150 \mathrm{~m} / \mathrm{s}^{2}$ max. (malfunction within 1 ms ) |
| Durability | Mechanical | 250,000 operations min. |
|  | Electrical | 100,000 operations min. |
| Electric shock protection class |  | Class II |
| PTI (tracking characteristic) |  | 175 |
| Degree of contamination |  | 3 (IEC60947-5-1) |
| Weight |  | Approx. 13 g <br> (in the case of a lighted DPDT switch) |
| Ambient operating temperature |  | $\begin{aligned} & -10^{\circ} \mathrm{C} \text { to } 55^{\circ} \mathrm{C} \\ & \text { (with no icing or condensation) } \end{aligned}$ |
| Ambient operating humidity |  | $35 \%$ to $85 \%$ RH |
| Ambient storage temperature |  | $\begin{aligned} & -25^{\circ} \mathrm{C} \text { to } 65^{\circ} \mathrm{C} \\ & \text { (with no icing or condensation) } \end{aligned}$ |

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


## Contact Form

| Name | Contact form |
| :---: | ---: |
| SPDT | сом $\quad-\mathrm{NC}$ |
|  | -NO |

Super-bright LED

| Rated <br> voltage | Rated <br> current | Operating <br> voltage | Internal limiting <br> resistor |
| :---: | :---: | :---: | :---: |
| 5 VDC |  | $5 \mathrm{VDC} \pm 5 \%$ | Red, yellow: $300 \Omega$ <br> Green: $160 \Omega$ |
|  | 8 mA | $12 \mathrm{VAC} / \mathrm{VDC} \pm 5 \%$ | Red, yellow: $1 \mathrm{k} \Omega$ <br> Green: $910 \Omega$ |
|  |  | $24 \mathrm{VAC} / \mathrm{VDC} \pm 5 \%$ | $2.4 \mathrm{k} \Omega$ |
|  |  |  |  |

## Screw-less Clamp

| Item | Type | Screw-less Clamp |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Recommended <br> wire size | $0.5 \mathrm{~mm}^{2}$ twisted wire or 0.8 mm -dia. solid wire |  |  |  |  |
| Usable <br> wires <br> and <br> tensile <br> strength | Twisted <br> wire | Solid <br> wire | $0.3 \mathrm{~mm}^{2}$ | $0.5 \mathrm{~mm}^{2}$ | $0.75 \mathrm{~mm}^{2}$ |
| Tensile <br> strength | 10 N | $1.25 \mathrm{~mm}^{2}$ |  |  |  |
| Length of exposed <br> wire |  |  |  |  |  |
| Compliant <br> standards | 0.8 mm dia. | 1.0 mm dia. | --- |  |  |

## Operating Characteristics

| Characteristics Type | Knob-type Selector Switch |  |
| :--- | :---: | :---: | :---: |
|  | 2 notches | 3 notches |
| Operating torque (OF) max. | $0.1 \mathrm{~N} \cdot \mathrm{~m}$ |  |
| Set position (SP) | $90 \pm 5^{\circ}$ | $45^{\circ+10} 0$ |

## Specifications

## Operation Angle



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

## Contact Form




## Nomenclature

## Model structure

## Selector

OFlange Shape
Rectangular
(A165 $\square$-J)

Protective


Switch
Switch Specifications
5 A at 125 VAC
5 A at 250 VAC
3 A at 30 VDC
Minimum applicable load:
1 mA at 5 VDC

## The flange can be rotated to easily change the operation angle of the knob.

For information on rotating the flange, refer to page 14.
Example: Knob-type Selector Switch with Two Notches

(Standard condition when shipped)
Note: The angle is $75^{\circ}$ for self-resetting models.

Rectangular A165 $\square$-J
Solder terminals (tab terminals \#110)


Note: See page 12 for panel cutouts.


Square A165 $\square$-A
Solder terminals (tab terminals \#110)


Note: See page 12 for panel cutouts.
Round A165 $\square$-T
Solder terminals (tab terminals \#110)


Note: See page 12 for panel cutouts.


Rectangular A165 $\square$-J
PCB terminals


- The lamp terminal is not also provided with nonlighted models.


Note: See page 12 for panel cutouts.


Rectangular A165W $\square$-T Reduced-voltage lighting solder terminals (tab terminals \#110)


Rectangular A165 $\square$-2S
Screw-Less Clamp


- The lamp terminal is also provided with nonlighted models.


Panel Cutouts


## Panel Cutouts

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

| Rectangular A165 $\square$-J | Square A165 $\square$-A, Round A165 $\square$-T |
| :---: | :---: |
| (Top View) | (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.
3. Figures in parentheses are for screw-less clamp connectors.

## Models with PCB Terminals

| Rectangular A165 $\square$-J | Square A165 $\square$-A, Round A165 $\square$-T |
| :---: | :---: |
| (Top View) | (Top View) |
| $16_{0}^{+0.2} \text { dia. }-24 \mathrm{~min} .$ | $16{ }_{0}^{+0.2}$ dia. |
|  |  |
|  | $14.7 \pm 0.05$ dia. $\square$ 24 min. <br> $5.1 \pm 0.05$ |
|  |  |

Note: 1. Ensure that the variation in the distance between the centers of neighboring mounting holes is less than $\pm 0.1 \mathrm{~mm}$
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

## Models with PCB Terminals



PCB Cutouts
(Bottom View)


Note: Secure the panel to the board using stud bolts if force will be applied to the board after wiring.

PCB Cutouts
(Bottom View)


Note: Secure the panel to the board using stud bolts if force will be applied to the board after wiring.

Note: For details of the terminal arrangement for Screw-Less Clamps, refer to the corresponding section for the A16.

Non-lighted Models with PCB Terminals (Lamp terminals are not provided with the Non-lighted Knob-type Selector Switches and Key-type Selector Switches.)


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

Flange Rotation (All Selector Switches)

## A165 Knob-type Selector Switch

Fix the Switch screw and rotate the flange in $45^{\circ}$ turns.

A165 Key-type Selector Switch
Fix the Switch screw and rotate the flange in $45^{\circ}$ turns.


## Safety Precautions

## Refer to Safety Precautions for All Pushbutton Switches/Indicators.



Always turn OFF the power and wait for 10 minutes before replacing the incandescent lamp. If the lamp is replaced immediately after the power is turned OFF, the remaining heat may cause burns.

## Precautions for Correct Use

## Mounting

- Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance.
- Do not tighten the mounting nut more than necessary using tools such as pointed-nose pliers. Doing so will damage the mounting nut.
The tightening torque is 0.29 to $0.49 \mathrm{~N} \cdot \mathrm{~m}$.


## Wiring

- Solder terminals and quick-connect terminals (\#110) are commonly used for terminals.
- Be sure to use electrical wires that are a size appropriate for the applied voltage and carry current (conductor size is 0.5 to 0.75 $\mathrm{mm}^{2}$ ). Perform soldering according to the conditions provided below. If the soldering is not properly performed, the lead wires will become detached, resulting in short-circuits.

1. Hand soldering: $350^{\circ} \mathrm{C}$, within 3 s
2. Dip soldering: $350^{\circ} \mathrm{C}$, within 3 s

Wait for one minute after soldering before exerting any external force on the solder.

- Use non-corrosive resin fluid as the flux.
- Make sure that the electric cord is wired so that it does not touch the Unit. If the electric cord touches the Unit, then electric wires with a heat resistance of $100^{\circ} \mathrm{C}$ min. must be used.
- After wiring the Switch, maintain an appropriate clearance and creepage distance.


## Operating Environment

- The IP65 model is designed with a degree of protection so that it will not sustain damage if it is subjected to water from any direction to the front of the panel.


## Using the Microload

- Insert a contact protection circuit, if necessary, to prevent the reduction of life expectancy due to extreme wear on the contacts caused by loads where inrush current occurs when the contact is opened and closed.
- The A16 allows both a standard load ( 125 V at $5 \mathrm{~A}, 250 \mathrm{~V}$ at 3 A ) and a microload. If a standard load is applied, however, the microload area cannot be used. If the microload area is used with a standard load, the contact surface will become rough, and the opening and closing of the contact for a microload may become unreliable.
- The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of $60 \%$ ( $\lambda$ 60) (conforming to JIS C5003).
The equation, $\lambda 60=0.5 \times 10^{-6}$ /operations indicates that the estimated malfunction rate is less than $1 / 2,000,000$ operations with a reliability level of $60 \%$.


LED

- The LED current-limiting resistor is built-in, so external resistance is not required.

| Rated voltage | Internal limiting resistor |
| :---: | :--- |
| 5 VDC | Red, yellow: $300 \Omega$ <br> Green: $160 \Omega$ |
| $12 \mathrm{VAC} / \mathrm{VDC}$ | Red, yellow: $1 \mathrm{k} \Omega$ <br> Green: $910 \Omega$ |
| $24 \mathrm{VAC} / \mathrm{VDC}$ | $2.4 \mathrm{k} \Omega$ |

## Others

- The oil-resistant IP65 uses NBR rubber and is resistant to general cutting oil and cooling oil. Some particular oils cannot be used with the oil-resistant IP65, however, so contact your OMRON representative for details.
- If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after the coating.
- Do not subject the Switch to extreme shock or vibration. Doing so will cause malfunctions and damage to the Switch.
Do not let sharp objects come into contact with the Switches that are made of resin. Doing so will damage the Switches, causing scratches on the outside of the operating parts, and malfunction. When handling the Switches, do not throw or drop them.


Do not place or drop heavy objects on the Switch.


## Terms and Conditions Agreement

Read and understand this catalog.
Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.
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- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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«JONHON» (основан в 1970 г.)
Разъемы специального, военного и аэрокосмического назначения:
(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)
«FORSTAR» (основан в 1998 г.)
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[^0]:    Note: Enter the desired color symbol for the Selector in $\square$ : R (red); Y (yellow); G (green). The Selector for non-lighted models is black.

[^1]:    Ordering as a Set: Refer to page 3.

[^2]:    Specifications and dimensions: Refer to pages 8 to 10.

