## FEATURES

- 8 mm or more is assured as insulation distance between contacts (Snap-in mounting 2 Form A and 3 Form A type) - Insulation distance between open contacts is more than 8 mm , as for the 3 Form A type, the combination of power supply circuit and low voltage circuit is possible.
- Durability of 100,000 times (10.1A 250V AC) is assured for

UL interlock circuit

- Constructed with easy-to-connect terminals . 250 Quick-

Connect

## TYPICAL APPLICATIONS

- Office equipment (Copiers, Facsimiles, Projectors)
- Home appliance (Microwave ovens, Refrigerators)


## RoHS compliant

## ORDERING INFORMATION



## PRODUCT TYPES

| Type |  |  |  | Part number |
| :---: | :---: | :---: | :---: | :---: |
| Mounting method | Button guard | Contact form | Contact gap |  |
| Screw mounting | Without button guard | 1 Form A | Min. 6 mm | AV16653F |
|  |  | 1 Form B | Min. 3 mm | AV15653F |
|  |  | 1 Form A 1 Form B | Max. 3 mm | AV14653F |
|  |  | 2 Form A | Min. 6 mm | AV13653F |
| Snap-in mounting | Without button guard | 2 Form A | Min. 8 mm | AV12753F |
|  |  | 3 Form A | Min. 8 mm | AV11753F |
|  | With button guard | 2 Form A | Min. 8 mm | AV12853F |
|  |  | 3 Form A | Min. 8 mm | AV11853F |

## CONSTRUCTION

## ■ Screw mounting 1 Form A 1 Form B type



Snap-in mounting 3 Form A type


## Method of ordering for foreign standard approved products

Compliance criteria for foreign standards are listed below.

| Mounting method | Contact form | Part number suffix |
| :---: | :---: | :---: |
|  |  | 3 |
| Screw mounting | 1 Form A, 1 Form B, 1 Form A 1 Form B | UL/C-UL (CSA standard), ENEC/VDE (EN standard) |
|  | 10.1A 250V AC |  |
| Snap-in mounting | 2 Form A |  |
|  | 10(3) A 250V $\sim$ |  |

## SPECIFICATIONS

## ■ Contact rating

| Contact voltage Load style | Resistive load <br> $(\cos \phi \fallingdotseq 1)$ | $M^{M o t o r ~ l o a d *}($ EN61058-1) <br> $(\cos \phi \fallingdotseq 0.6)$ |
| :---: | :---: | :---: |
| 125 V AC | 10.1 A | 3 A |
| 250 V AC | 10.1 A | 3 A |

Note: * The motor load rating is in accordance with EN61058-1 which designates an inrush current switching capability of 6 times the indicating rating.

## Characteristics

| Item |  | Specifications |
| :---: | :---: | :---: |
| Expected life | Mechanical | Min. $10^{6}$ (at 60 cpm ) |
|  | Electrical | Min. $10^{5}$ (10.1A 250 V AC) (at 20 cpm , operating speed: $10 \mathrm{~mm} / \mathrm{sec}$.) Min. $5 \times 10^{4}$ (10(3)A 250V ~) |
| Insulation resistance |  | Min. $100 \mathrm{M} \Omega$ (at 500 V DC) |
| Dielectric strength | Between non-continuous terminals | 2,000 Vrms for 1 min. |
|  | Between each terminal and other exposed metal parts | 2,500 Vrms for 1 min. |
|  | Between each terminal and ground | 2,000 Vrms for 1 min. |
| Contact resistance |  | Initial Max. 100m $\Omega$ (by voltage drop at 1A 6 to 8V DC) |
| Temperature rise (terminal section) |  | Initial Max. $45^{\circ} \mathrm{C}$, After test Max. $55^{\circ} \mathrm{C}$ |
| Vibration resistance |  | 10 to 55 Hz at double amplitude of 1.5 mm (Contact opening Max. 1 msec .) |
| Shock resistance |  | Min. $294 \mathrm{~m} / \mathrm{s}^{2}$ (Contact opening Max. 1 msec .) |
| Actuator strength |  | 49 N for 1 minute (For operating direction) |
| Tensile terminal strength |  | Min. 147 N (Pulling for operating direction) |
| Allowable operating speed |  | 10 to $300 \mathrm{~mm} / \mathrm{sec}$. |
| Allowable operating cycle rate |  | 60 cpm |
| Cold and heat resistance |  | $-40^{\circ} \mathrm{C}$ to $-45^{\circ} \mathrm{C}$ : 48 hours, $+80^{\circ} \mathrm{C}$ to $+90^{\circ} \mathrm{C}$ : 48 hours |
| Ambient temperature |  | -25 to $+85^{\circ} \mathrm{C}$ no freezing and condensing |
| Flame retardancy |  | Min. UL 94V-1 |
| Tracking resistance (CTI) |  | Min. 175 |
| Contact specifications | Contact material | AgCuO alloy |
| Unit weight |  | Approx. 14 g |
| Protection grade |  | IP40 |

[^0]
## Operating characteristics

1) Screw mounting type

| Contact arrangement | Operating Force (OF) <br> Max. | Total operating Force <br> (TF) Max. <br> Pushbutton position: <br> 10 mm | Free Position (FP) <br> Max. | Operating Position <br> (OP) | Total Travel Position <br> (TTP) | Over Travel (OT) Min. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 Form A | (NO contact to ON) <br> 4.9 N | 6.4 N | 16.6 mm | (NO contact to ON) <br> $12.7 \pm 0.4 \mathrm{~mm}$ | 10 mm | 2.1 mm |
| 1 Form B | (NC contact to OFF) <br> 2.9 N | 7.4 N | 15.3 mm | (NC contact to OFF) <br> $14.9 \pm 0.4 \mathrm{~mm}$ | 10 mm | 4.3 mm |
| 1 Form A 1 Form B | (NO contact to ON) <br> 5.9 N | 7.4 N | 15.3 mm | (NO contact to ON) <br> $12.7 \pm 0.4 \mathrm{~mm}$ | 10 mm | 2.1 mm |
| 1 Form A 1 Form B | (NC contact to OFF) <br> 2.9 N | 7.4 N | 15.3 mm | (NC contact to OFF) <br> $14.9 \pm 0.4 \mathrm{~mm}$ | 10 mm | 2.1 mm |
| 2 Form A | (NO contact to ON) <br> 7.8 N | 9.8 N | 16.6 mm | (NO contact to ON) <br> $12.7 \pm 0.4 \mathrm{~mm}$ | 10 mm | 2.1 mm |

## 2) Snap-in mounting type

| Contact arrangement | Operating Force (OF) <br> Max. | Total operating Force <br> (TF) Max. <br> Pushbutton position: <br> 10 mm | Free Position (FP) <br> Max. | Operating Position <br> (OP) | Total Travel Position <br> (TTP) | Over Travel (OT) Min. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 Form A | (NO contact to ON) <br> 7.8 N | 9.8 N | 14 mm | (NO contact to ON) <br> $9.3 \pm 0.4 \mathrm{~mm}$ | 7.5 mm | 2.1 mm |
| 3 Form A | (NO contact to ON) <br> $9.8 N$ | 14.7 N | 14 mm | (NO contact to ON) <br> $9.3 \pm 0.4 \mathrm{~mm}$ | 7.5 mm | 2.1 mm |

## CONTACT OPERATION CHART

■1 Form A type

1. Free
2. Operating position
3. Total travel position


## DIMENSIONS

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

## - Screw mounting type

1 Form A, 1 Form B, 1 Form A 1 Form B type

## CAD Data

External dimensions


## Contact gap

1 Form A: Min. 6 mm
1 Form B: Min. 3mm
1 Form A 1 Form B: Max. 3mm
Note: Terminal no. 3 \& 4 are for 1 Form A type.
Terminal no. 1 \& 2 are for 1 Form B type.

## AV1 (GW) Interlock Switches

## 2 Form A type

## CAD Data

## External dimensions



Contact gap
2 Form A: Min. 6mm

## ■ Snap-in mounting type

2 Form A type

## CAD Data



2 Form A type without button guard


External dimensions


Quick-connec erminal


2 Form A type with button guard


Recommended panel opening dimensions (common)


| Panel thickness | 1.0 | 2.5 |
| :---: | :---: | :---: |
| Dimension A | 36.7 | 37.7 |

[^1]
## CAD Data

## External dimensions



3 Form A type without button guard


3 Form A type with button guard


Recommended panel opening dimensions (common)


| Panel thickness | 1.0 | 2.5 |
| :---: | :---: | :---: |
| Dimension A | 47.0 | 47.3 |

Contact gap
3 Form A: Min. 8mm

## CAUTIONS FOR USE

## $\square$ Switch mounting

(Screw mounting type)

1) Mount the switch to a smooth surface using M4 screws. Tighten the screws with 0.3 to $0.5 \mathrm{~N} \cdot \mathrm{~m}$ torque. To prevent loosening of the mounting screws, it is recommended that spring washers be used in combination with adhesive material for locking the screws.
(One-touch mounting type) Mount on cut panel shapes with dimensions shown in the drawing. If you are considering panels that fall outside recommended shapes and dimensions, please contact us.
2) With respect to the position of the operating device and the switch body, set the position as indicated in the condition. If this condition is exceeded, the mechanical and electrical performance will be impaired. In addition, the force applied by the operating device should be in a perpendicular direction. Even if the pushbutton is used in the full total travel position (OT), there will be no influence on the life of the switch.
(Screw mounting type)

(Snap-in mounting type)


## Connection method

With respect to the terminal connections, it is recommended that receptacles with insulating sleeves, easy lock connectors or positive lock connectors be used.
Also, consideration should be given to the wiring not to apply force to the terminal section normally.

## ■ Operation speed

In perpendicular operation, avoid using operating speeds beyond range of 10 to $300 \mathrm{~mm} / \mathrm{sec}$.

## Environment

Avoid using and storing these switches in a location where they will be exposed to corrosive gases, silicon, or high dust levels, all of which can have an adverse effect on the contacts.


[^0]:    Note: Test condition and judgement are complying with "NECA C4505", "EN61058-1" and "UL1054".

[^1]:    Contact gap
    2 Form A: Min. 8mm

