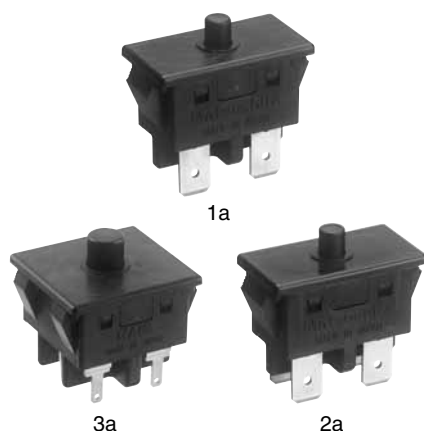


**Panasonic**  
ideas for life

**SAFETY INTERLOCK  
SWITCH SMALL SIZE &  
LIGHT FORCE**

**AGX (GX)  
SWITCHES**



## FEATURES

- Constructed with dual restoration springs and double cut-off for safety
- Contact gap of greater than 4mm (Conforming to IEC60950-1)
- As for 3 Form A type, combination of power contact and signal contact is available
- UL/C-UL/ENEC/VDE approved

## TYPICAL APPLICATIONS

- Door interlock of copiers, printers, facsimiles
- Door interlock of other compact appliances

Compliance with RoHS Directive

## ORDERING INFORMATION

Ex. AGX     F

| Product Name | Contact arrangement   | Capacity and mounting method               | Terminals  | Contact         |
|--------------|---|--|--|-----------------|
| GX           | 1: 1 Form A Power switching contact<br>2: 2 Form A Power switching contact<br>3: 3 Form A Power switching contact<br>6: 1 Form A Power switching contact and 2 Form A Signal switching contact<br>7: 2 Form A Power switching contact and 1 Form A Signal switching contact | 0: Standard type 10.1 A (Snap-in mounting) | 5: .250 Quick-connect terminal (O.T. 2 mm)<br>6: .250 Quick-connect terminal (O.T. 4 mm) | F: Cadmium free |

## PRODUCT TYPES

| Rating                         | Overtravel (O.T.)<br>Min. mm | Contact arrangement   | Switching timing |           | Part number |
|--------------------------------|------------------------------|---|------------------|-----------|-------------|
|                                |                              |   | 1st ON           | 2nd ON    |             |
| Standard type<br>10.1A 250V AC | 2                            | 1 Form A Power switching contact                                      | —                | —         | AGX105F     |
|                                |                              | 2 Form A Power switching contact                                      | —                | —         | AGX205F     |
|                                | 4                            | 1 Form A Power switching contact                                      | —                | —         | AGX106F     |
|                                |                              | 2 Form A Power switching contact                                      | —                | —         | AGX206F     |
|                                |                              | 3 Form A Power switching contact                                      | 3a power         | —         | AGX306F     |
|                                |                              | 1 Form A Power switching contact<br>2 Form A Signal switching contact | 1a power         | 2a signal | AGX606F     |
|                                |                              | 2 Form A Power switching contact<br>1 Form A Signal switching contact | 2a power         | 1a signal | AGX706F     |

## SPECIFICATIONS

## 1. Contact rating

| Number of contact                           | Resistive load<br>( $\cos \phi \approx 1$ )                                   | Motor load* (EN61058-1)<br>( $\cos \phi \approx 0.6$ ) |
|---|---|--|
| Standard type<br>power switching contact    | 10.1A 125V AC<br>10.1A 250V AC<br>6A 30V DC<br>3A 48V DC (3 Form A type only) | 3A 125V AC<br>3A 250V AC                               |
| Signal switching contact<br>(3 Form A only) | 0.1A 48V DC<br>Contact Low-level circuit:<br>1mA 5V DC                        | —  |

Remark: Motor load designates an inrush current switching capability of 6 times the indicated rating

## 2. Characteristics

| Type  | Standard type                                      |
|---|--|
| Expected life   | 10 <sup>6</sup> min.                               |
| Mechanical<br>(at 60 cpm)                             |  |
| Electrical<br>(at 20 cpm, operating speed: 10mm/sec.) | 10 <sup>5</sup><br>(at 10.1A 250V AC)              |
| Insulation resistance                                 | 100MΩ at 500V DC                                   |
| Dielectric strength                                   | 2,000Vrms for 1 minute                             |
| Between terminals                                     |  |
| Between terminals and other exposed metal parts       | 2,500Vrms for 1 minute                             |
| Between terminals and ground                          | 2,000Vrms for 1 minute                             |
| Initial contact resistance                            | 100mΩ Max. (by voltage drop at 1A, 6 to 8V DC)     |
| Temperature rise (terminal portion)                   | Initial 45 deg. Max., After test 55 deg. Max.      |
| Vibration resistance                                  | 10 to 55Hz at single amplitude of 0.75mm           |
| Shock resistance                                      | Min. 294m/s <sup>2</sup>                           |
| Actuator strength                                     | 49N for 1 minute<br>(For operating direction)      |
| Tensile terminal strength                             | Min. 147N<br>(Pulling for operating direction)     |
| Allowable operating speed                             | Min. 10 to 300mm/second                            |
| Allowable operating cycle rate                        | 60 cpm   |
| Temperature resistance                                | −40°C to −45°C: 48 hours, +80°C to +90°C: 48 hours |
| Ambient temperature                                   | −25°C to +85°C (Not freezing nor condensing)       |
| Flame retardancy                                      | Min. UL 94V-1                                      |
| Tracking resistance (CTI)                             | Min. 175   |
| Contact material                                      | AgCuO alloy  |

\*Remark: Test condition and judgement are complying with "JIS C4505", "EN61058" and "UL1054".

## 3. Operating characteristics

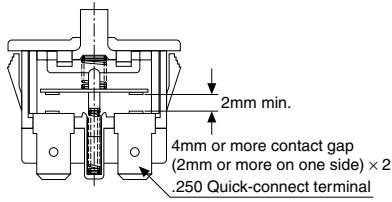
| Contact arrangement            |          | Part number | Operating force (O.F.) Max. | Total operating force (T.F.)<br>Max. Push button position: 2.4mm | Free position (F.P.) Max. mm | Operating position (O.P.) mm | Total travel position (T.T.P.) mm | Over travel (O.T.) Min. mm |
|--------------------------------|----------|-------------|-----------------------------|--|------------------------------|------------------------------|-----------------------------------|----------------------------|
| Standard type<br>10.1A 250V AC | 1 Form A | AGX105F     | 3.92 N                      | 4.90 N   | 8                            | 4.8±0.4                      | 2.4                               | 2.0                        |
|                                | 2 Form A | AGX205F     | 3.92 N                      | 4.90 N   | 8                            | 4.8±0.4                      | 2.4                               | 2.0                        |
|                                | 1 Form A | AGX106F     | 3.92 N                      | 6.86 N   | 10                           | 7.0±0.4                      | 2.4                               | 4.0                        |
|                                | 2 Form A | AGX206F     | 3.92 N                      | 6.86 N   | 10                           | 7.0±0.4                      | 2.4                               | 4.0                        |
|                                | 3 Form A | AGX306F     | 2.94 N                      | 5.88 N   | 10                           | 7.0±0.4                      | 2.4                               | 4.0                        |

Remark: With the 3 Form A type sequence operation type, the specifications for the contact where the operation position turns ON first are as per the above table. However, the specifications for the contact where the operation position turns ON later are delayed by approximately 0.8 mm compared with the above table.

## CONSTRUCTION

Dual safety construction

- Dual restoration spring
- Double cut-off type



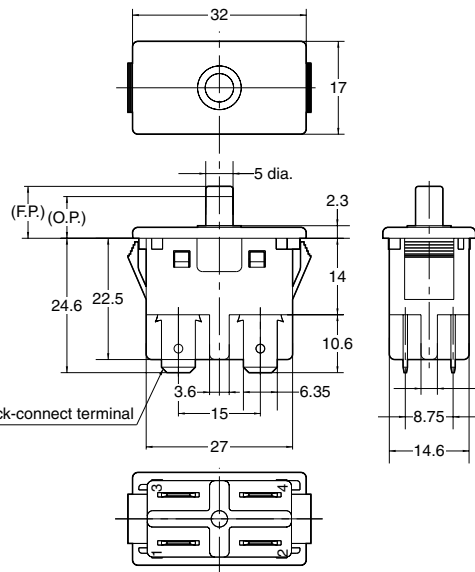
## DIMENSIONS

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

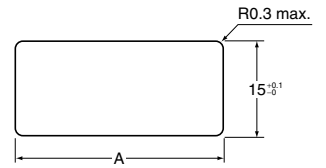
1 Form A

mm General tolerance:  $\pm 0.4$

**CAD Data**



Hole cutting dimension



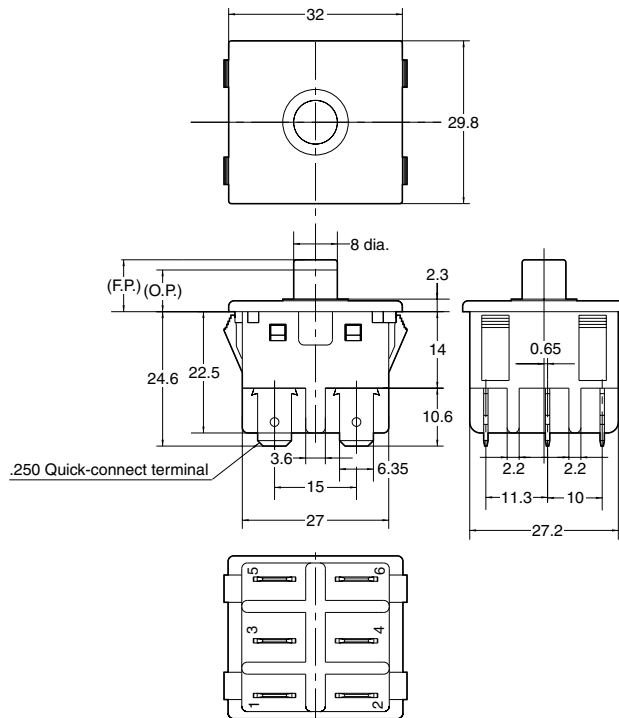
| Panel thickness | 1.0 to 1.75         | 1.75 to 2.5         |
|-----------------|---------------------|---------------------|
| Dimension A     | 30.2 $^{+0.1}_{-0}$ | 30.5 $^{+0.1}_{-0}$ |

(Copper is standard as panel material)

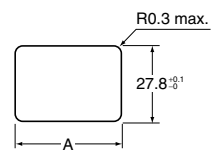
Remark: 1 Form A type does not have terminal No. 1 nor No. 2

2 Form A

**CAD Data**



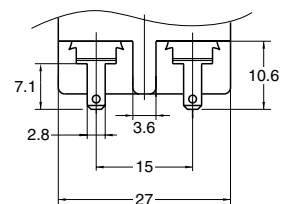
Hole cutting dimension



| Panel thickness | 0.8 to 1.75         | 1.75 to 2.5         |
|-----------------|---------------------|---------------------|
| Dimension A     | 30.2 $^{+0.1}_{-0}$ | 30.5 $^{+0.1}_{-0}$ |

(Copper is standard as panel material)

• Signal switching contact



Remark: Power switching contact type has .250 Quick-connect terminal and signal switching contact type has .110 Quick-connect terminal.

3 Form A

**CAD Data**



Power switching contact



Signal switching contact

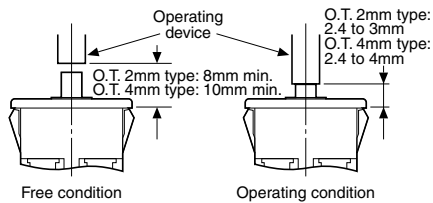
## NOTES

### 1. Switch mounting

Mount the switch with the hole cutting dimensions shown in the drawing.

### 2. Adjustment of the operating device:

With respect to the position of the operating device and the switch body, set the position as indicated in the condition on the right. 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, there will be no influence on the life of the switch.



### 3. Confirming insulating distance

Before mounting and wiring, the insulating distance between terminals and between the terminals and ground should be checked for assurance of proper distance. With respect to the terminal connections, it is recommended that receptacles with insulating sleeves or "Positive Lock Connector\*" be used. Also consideration should be given to the wiring not to apply force to the terminal section normally.

\*Registered by AMP, Ltd.

### 4. Regarding fastening lead wires to terminals

Use .250 receptacle (terminal thickness 0.8mm) or .110 receptacle (terminal thickness 0.5mm) should be used for connection. Make sure the sockets are straight. If they are skewed, the terminals will require excessive insertion force. The insertion force varies according to manufacturer's specifications. Check it for

the sockets you are using.

### 5. Material of the panel

Steel sheet is recommended as the panel material. When using soft material, confirm the condition for actual use.

### 6. Quality check under actual loading conditions

To improve reliability, check the switch under actual loading conditions. Avoid any situation that may adversely affect switching performance.

### 7. Avoid using and keeping switches in the following conditions.

- In corrosive gases
- In a dusty environment
- Where silicon atmosphere prevails

## REFERENCE

### 1. Outline of UL1054 test

Overload test

Standard type: 12.5A 250V AC

(Power factor 0.75 to 0.8)

Endurance test

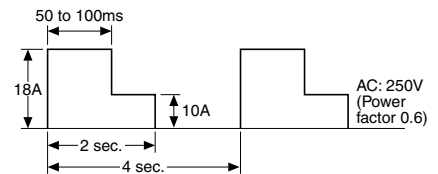
Standard type: 10A 250V AC

(Power factor 0.75 to 0.8)

After testing, temperature rise of terminals should be less than 30°C and no abnormality should be observed in characteristics.

### 2. Outline of EN61058-1 test

After switching 25,000 times on the above load condition at both 85<sup>+5</sup>°C and 25±10°C, temperature rise of terminals should be less than 55°C and no abnormality should be observed in characteristics.



## INTRODUCTION OF CONNECTORS (made by Nippon Tanshi co.,Ltd)

### 1. For 2 Form A power switching contact type



Applicable AGX switch part No.:

AGX205F, AGX206F

\* Housing

Model number: N1620-4204

\* Receptacle

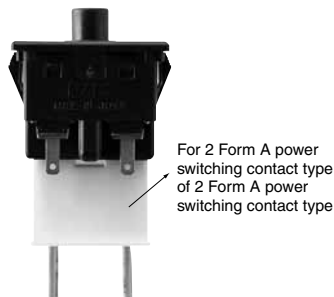
Model numbers

17168-2 (for narrow wires, post-plated product)

17168-M2 (for narrow wires, wood veneer plated product)

172131-M2 (for thick wires)

### 2. For 2 Form A power switching contact type of 2 Form A power switching contact + 1 Form A signal switching contact



Applicable AGX switch part No.:

AGX706F

\* Housing

Model number: N3220-4204

\* Receptacle

Model numbers

17901-M2, 17902-M2, 17903-M3 (wire size differences)

Remark: Please consult us if you need above connectors.