



**Door Interlock Switches
Compliant with
Safety Standards**

**AV1 (GW)
SWITCHES**



RoHS compliant

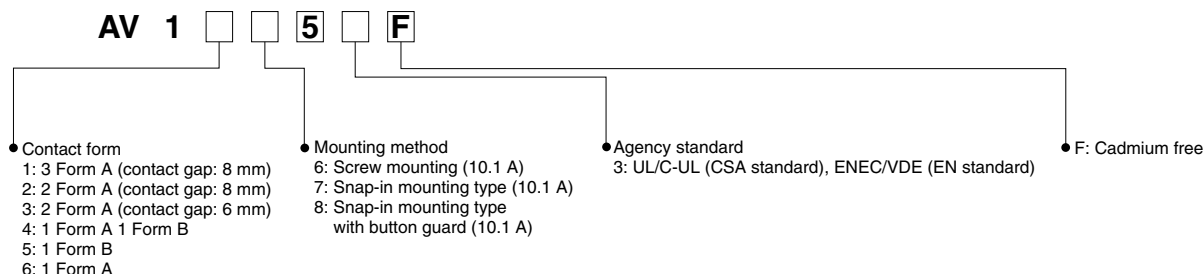
FEATURES

- 8mm 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)

ORDERING INFORMATION



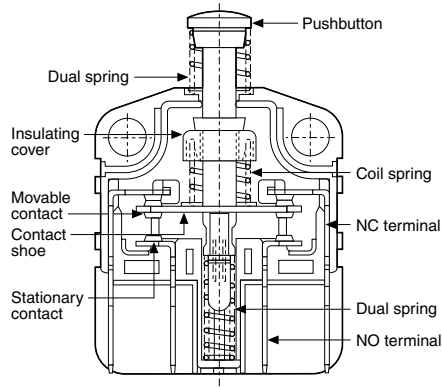
Note: Not every combination is available. Please refer to the following table "PRODUCT TYPES".

PRODUCT TYPES

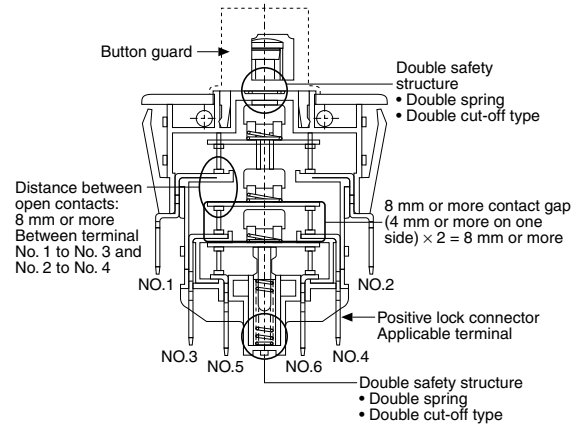
Type				Part number
Mounting method	Button guard	Contact form	Contact gap	
Screw mounting	Without button guard	1 Form A	Min. 6 mm	AV16653F
		1 Form B	Min. 3 mm	AV15653F
		1 Form A 1 Form B	Max. 3 mm	AV14653F
		2 Form A	Min. 6 mm	AV13653F
Snap-in mounting	Without button guard	2 Form A	Min. 8 mm	AV12753F
		3 Form A	Min. 8 mm	AV11753F
		2 Form A	Min. 8 mm	AV12853F
	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 10(3) A 250V ~
	2 Form A	
Snap-in mounting	2 Form A	
	3 Form A	

SPECIFICATIONS

■ Contact rating

Contact voltage	Load style	Resistive load ($\cos \phi \approx 1$)	Motor load* (EN61058-1) ($\cos \phi \approx 0.6$)
125V AC		10.1A	3A
250V AC		10.1A	3A

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 250V AC) (at 20 cpm, operating speed: 10mm/sec.) Min. 5 × 10 ⁴ (10(3)A 250V ~)
Insulation resistance		Min. 100MΩ (at 500V 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. 100mΩ (by voltage drop at 1A 6 to 8V DC)
Temperature rise (terminal section)		Initial Max. 45°C, After test Max. 55°C
Vibration resistance		10 to 55Hz at double amplitude of 1.5mm (Contact opening Max. 1 msec.)
Shock resistance		Min. 294 m/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 300mm/sec.
Allowable operating cycle rate		60 cpm
Cold and heat resistance		-40°C to -45°C: 48 hours, +80°C to +90°C: 48 hours
Ambient temperature		-25 to +85°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

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

■ Operating characteristics

1) Screw mounting type

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

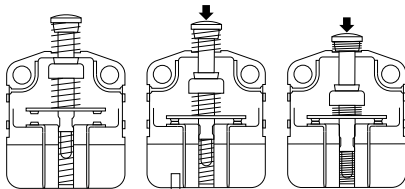
2) Snap-in mounting type

Contact arrangement	Operating Force (OF) Max.	Total operating Force (TF) Max. Pushbutton position: 10mm	Free Position (FP) Max.	Operating Position (OP)	Total Travel Position (TTP)	Over Travel (OT) Min.
2 Form A	(NO contact to ON) 7.8N	9.8N	14 mm	(NO contact to ON) 9.3±0.4 mm	7.5 mm	2.1 mm
3 Form A	(NO contact to ON) 9.8N	14.7N	14 mm	(NO contact to ON) 9.3±0.4 mm	7.5 mm	2.1 mm

CONTACT OPERATION CHART

■ 1 Form A type

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



DIMENSIONS

(Unit: mm) General tolerance: ±0.4

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

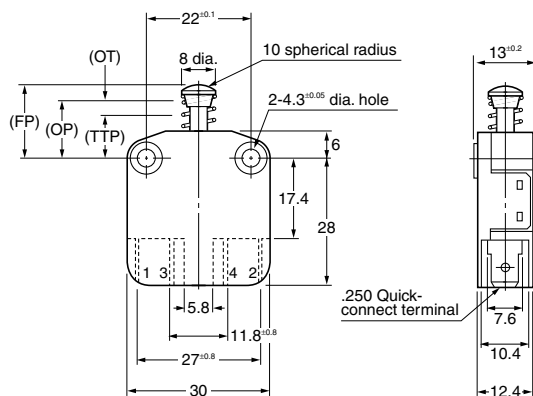
■ Screw mounting type

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

CAD Data



External dimensions



Contact gap

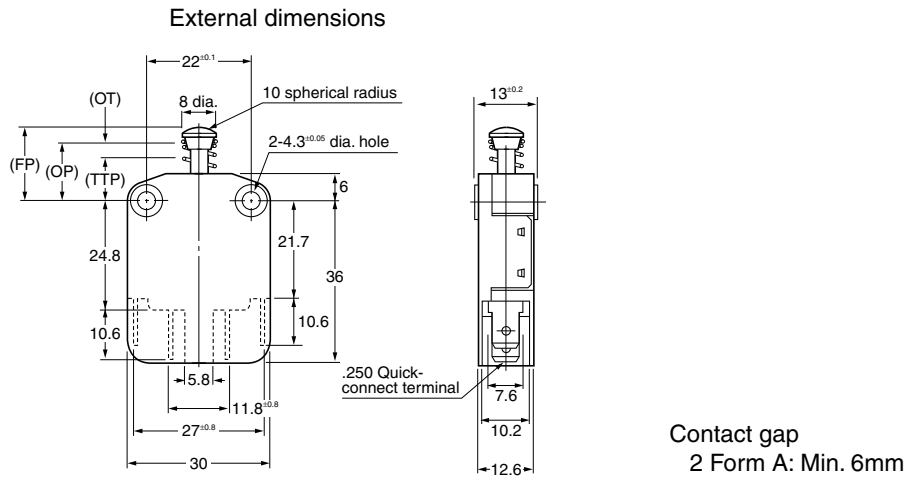
- 1 Form A: Min. 6mm
- 1 Form B: Min. 3mm
- 1 Form A 1 Form B: Max. 3mm

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

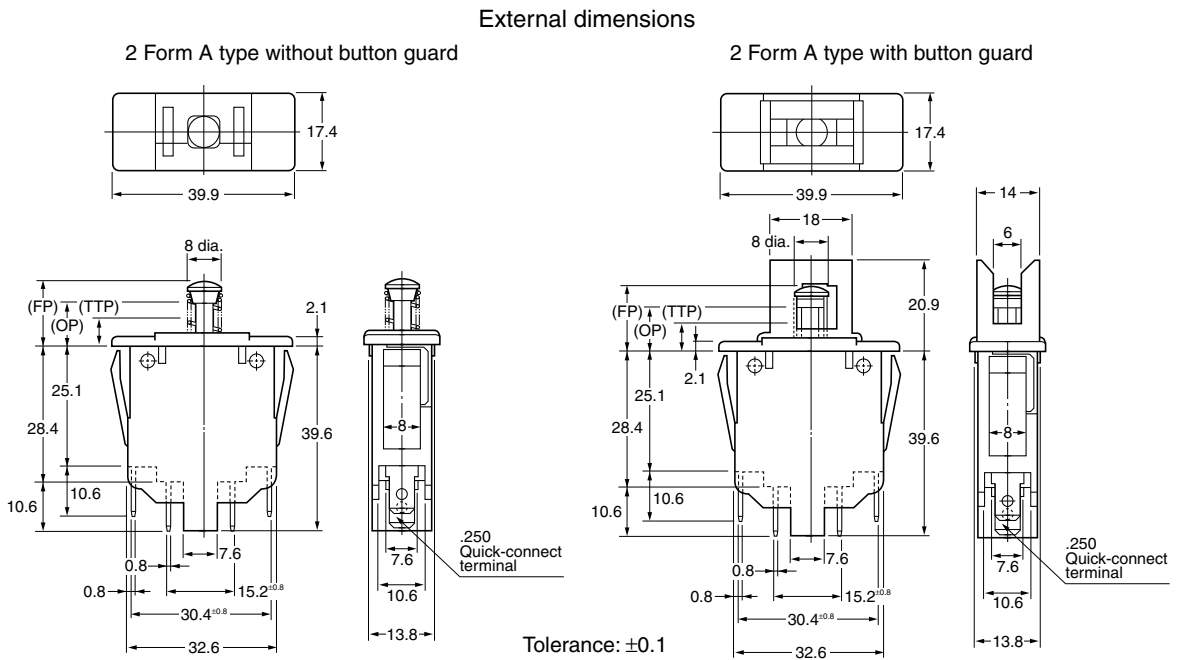
CAD Data



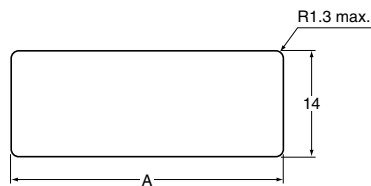
■ Snap-in mounting type

2 Form A type

CAD Data



Recommended panel opening dimensions (common)



Panel thickness	1.0	2.5
Dimension A	36.7	37.7

Contact gap
2 Form A: Min. 8mm

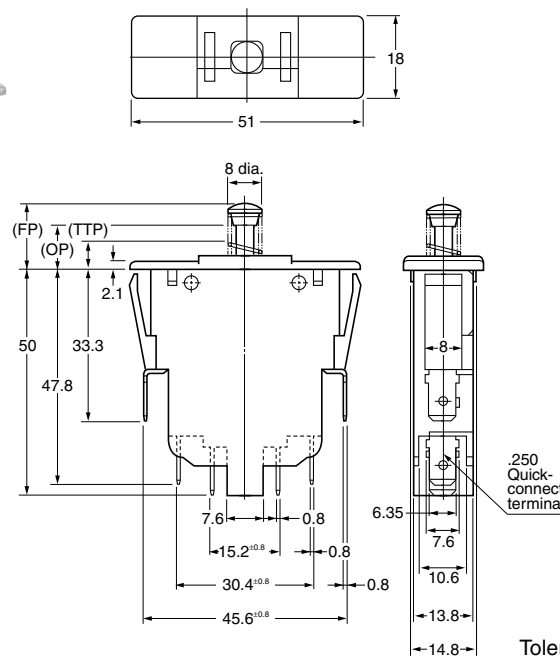
3 Form A type

CAD Data

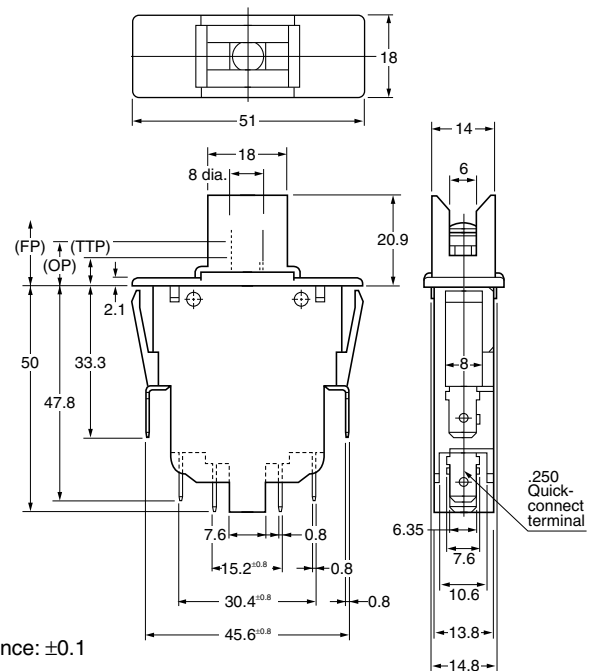


External dimensions

3 Form A type without button guard

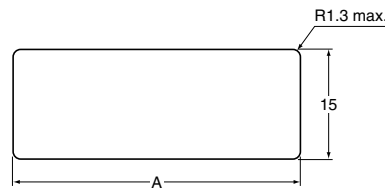


3 Form A type with button guard



Tolerance: ± 0.1

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

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 N·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.

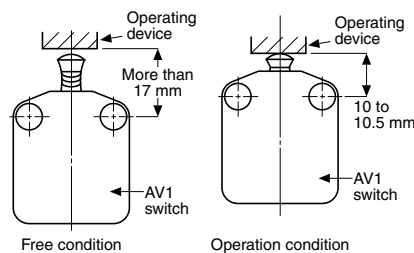
(One-touch mounting type)

Mount on cut panel shapes with dimensions shown in the drawing.

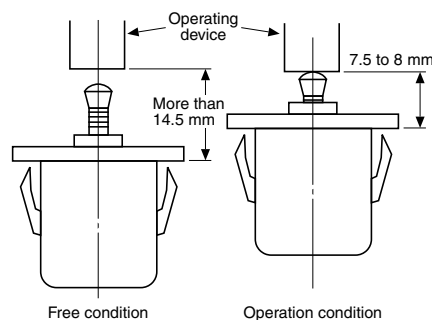
If you are considering panels that fall outside recommended shapes and dimensions, please contact us.

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 mm/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.