



Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

**SAFETY NOTE**

**CAUTION**

Caution notices are used where inattention might cause personal injury or damage to equipment.

**1 Type**

Model No.	Door monitor contacts	Cable length
SG-A1-03-1	3NC	1m
SG-A1-03-5		5m
SG-A1-12-1	2NC + 1NO	1m
SG-A1-12-5		5m
SG-A1-02-1	2NC	1m
SG-A1-02-5		5m

**2 Specifications and Ratings**

Applicable Standards	ISO14119, EN1088 IEC60947-5-1, EN60947-5-1 GS-ET-15, UL508 CSA C22.2 No.14 GB14048.5																							
Standards for Use	IEC60204-1/ EN60204-1																							
Applicable Directives	Low Voltage Directive (2014/35/EU) Machinery Directive (2006/42/EC)																							
Operating Condition	Operating Temperature: -25 to +70°C (no freezing) Operating Humidity: 45 to 85%RH (no condensation) Storage Temperature: -40 to +80°C (no freezing) Pollution Degree: 3 (Inside2) Altitude: 2000m maximum																							
Impulse withstand voltage <Uimp>	4kV																							
Rated insulation voltage <Ui>	300V																							
Thermal Current <Ith>	2.5A																							
Contact Ratings (Reference Values) <Ue, Ie>	<table border="1"> <tr> <td></td> <td></td> <td>30V</td> <td>125V</td> <td>250V</td> </tr> <tr> <td rowspan="2">AC</td> <td>Resistive load(AC-12)</td> <td>—</td> <td>2.5A</td> <td>1.5A</td> </tr> <tr> <td>Inductive load(AC-15)</td> <td>—</td> <td>1.5A</td> <td>0.75A</td> </tr> <tr> <td rowspan="2">DC</td> <td>Resistive load(DC-12)</td> <td>2.5A</td> <td>1.1A</td> <td>0.55A</td> </tr> <tr> <td>Inductive load(DC-13)</td> <td>2.3A</td> <td>0.55A</td> <td>0.27A</td> </tr> </table>			30V	125V	250V	AC	Resistive load(AC-12)	—	2.5A	1.5A	Inductive load(AC-15)	—	1.5A	0.75A	DC	Resistive load(DC-12)	2.5A	1.1A	0.55A	Inductive load(DC-13)	2.3A	0.55A	0.27A
		30V	125V	250V																				
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	Inductive load(DC-13)	2.3A	0.55A	0.27A																				
Electric Shock Protection Class	Class II (IEC61140)																							
Degree of Protection	IP67 (IEC60529)																							
Vibration Resistance	Operating Extremes: 300m/s <sup>2</sup> Damage Limits: 1000m/s <sup>2</sup>																							
Shock Resistance	Operating Extremes: 5 to 55 Hz, half amplitude 0.5 mm Damage Limits: 30 Hz, half amplitude 1.5 mm																							
Operating Frequency	1200 operations/hour																							
Operating Speed	0.05 to 1.0 m/s																							
B10d	2,000,000 (EN ISO 13849-1)																							
Mechanical Durability	1,000,000 operations minimum (GS-ET-15)																							
Direct Opening Travel	8 mm minimum																							
Direct Opening Force	60 N minimum																							
Contact Resistance	300 mΩ maximum (Initial value, at cable length 1m)																							
Short-Circuit Protective Device	250V AC, 10A Fuse																							
Weight	Approx. 120g (at SG-A1-03-1)																							

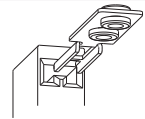
**Ratings approved by safety agencies**

- (1) TÜV rating
- (2) UL, c-UL rating
- AC15: 0.75A, 240 V AC
- C300 240 V AC, 0.75 A : Pilot duty
- DC13: 0.27A, 250 V DC
- Q300 250 V DC, 0.27 A : Pilot duty
- DC13: 2.3A, 30 V DC

**3 Mounting**

Install the safety switch on the immovable machine or guard, and install the actuator on the movable door. Do not install both safety switch and actuator on the movable door, otherwise failure will occur.

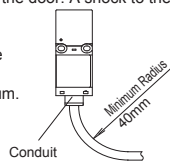
Note : When inserting an actuator into the slot, make sure to arrange the shapes in the same direction, as shown on the right.



**4 Notes for Operation**

**Installation**

- Regardless of door types, do not use the safety switch as a door stop.
- Install a mechanical door stop at the end of the door to protect the safety switch against an excessive force.
- Do not apply an excessive shock to the safety switch when opening or closing the door. A shock to the safety switch exceeding 1,000 m/s<sup>2</sup> may cause failure.
- Do not fasten and loosen the conduit at the bottom of the safety switch.
- When wiring, make sure that liquid such as water and oil does not intrude from the tip of cable.
- When bending cable at wiring, secure the cable radius of 40 mm at the minimum.
- Be sure to use the dedicated actuator only, and do not operate the SG-A1 series.
- Otherwise, the safety of the system may not be maintained.



**WARNING**

- Turn off the power to the safety switch before starting installation, removal, wiring, maintenance, and inspection on the safety switch. Failure to turn power off may cause electrical shocks or fire hazard.
- Do not disassemble or modify the switch. Also do not attempt to disable the safety switch function, otherwise a breakdown or an accident will result.

**CAUTION**

- Mount the actuator so that it will not hit the operator when the door is open, otherwise injury may be caused.
- Pay attention to the management of spare actuator. Safety function of door safety switch will be lost in case the spare actuator is inserted into the safety switch.
- Ensure that the actuator is firmly fastened to the door (welding, rivet, special screw) in the appropriate location, so that the actuator cannot be removed easily.
- Do not cut or remodel the actuator, otherwise failure will occur.
- Performance Level according to EN ISO 13849-1 is reduced with series connected safety components due to decreased fault recognition.
- The overall concept of control system, into which the safety components has been integrated, must be validated in accordance with EN ISO 13849-2.

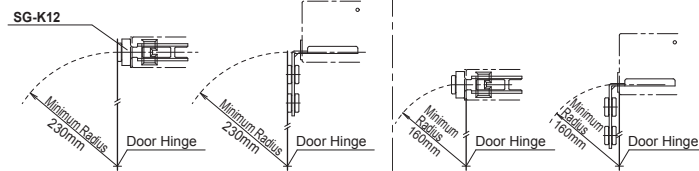
**5 Adjustments**

**Minimum Radius of Hinged Door**

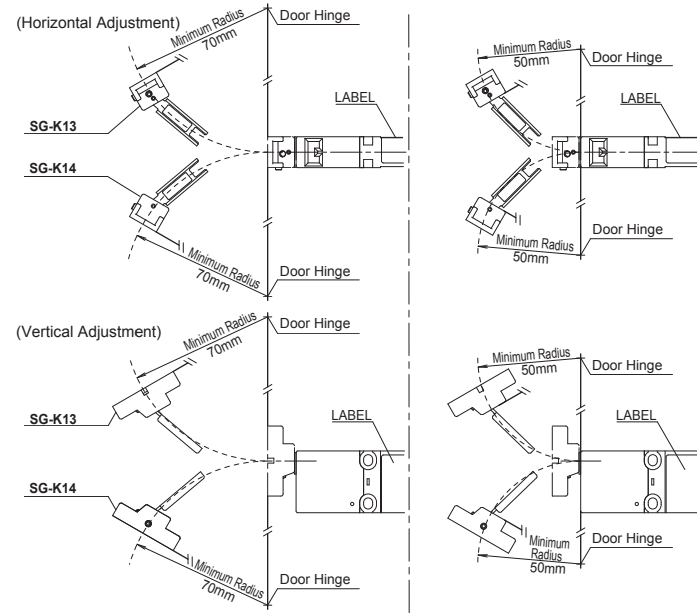
When using the safety switch for a hinged door, the minimum radius of the applicable door is shown in the following figures.



**When using L-shaped actuator (SG-K12)**



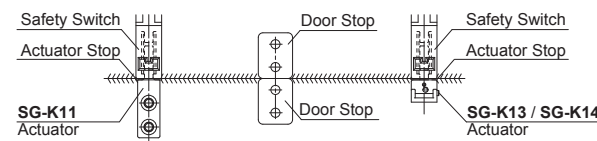
**When using angle adjustable actuator (SG-K13 / SG-K14)**



Note: The figures shown above are based on the condition that the actuator enters and exits the actuator entry slot smoothly when the door is closed or opened. Since there may be deviation or dislocation of the hinged door, make sure of correct operation in the actual application before installation.

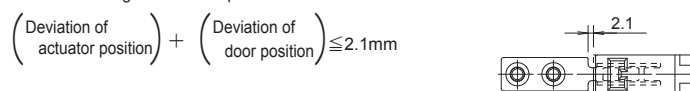
**Actuator Mounting Reference Position**

- As shown below, the mounting reference position of the actuator inserted into the safety switch is: The actuator stop touches the safety switch lightly. (After mounting the actuator, remove the actuator stop from the safety switch.)



**Actuator Mounting Tolerance**

- Mounting tolerance of the actuator is 1.0mm from the center of the actuator to up, down, right, and, left.
- Actuator can move 2.1mm from the mounting position without affecting the contact operation.



**Recommended Screw Tightening Torque**

Name or Use	Screw Tightening Torque
For mounting the safety switch (M4 screw) ※1	1.0 to 1.5N · m
For mounting the actuator (M4 screw) ※1	1.0 to 1.5N · m

※1 : The above recommended tightening torque of the mounting screw is the value confirmed with hex socket head bolts. When other screws are used and tightened to a smaller torque, make sure that the screws do not become loose after mounting.

**Adjusting the Angle Adjustable (vertical/horizontal) Actuator**

- Using the angle adjustment screw (M3 hexagon socket set screw), the actuator angle can be adjusted up to 20° (refer to dimensions).
- The larger the actuator angle, the smaller the applicable radius of the door swing. After installing the actuator, open the door. Then adjust the actuator angle so that the actuator enters the entry slot of the safety switch properly.
- After adjusting the actuator angle, apply loctite or the like on the adjustment screw to prevent loosening. Use screw locking agent that is compatible with the base material.
- Base: PA66 (66 nylon) of glass reinforced grade
- Angle adjustment screws: stainless steel

**6 Wiring**

**Contact Configuration and Operation**

■ : Contact closed □ : Contact open

Type	Contact Configuration	Contact Operation
SG-A1-02-□		
SG-A1-12-□		
SG-A1-03-□		

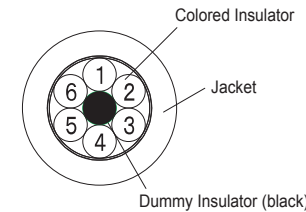
**Specifications of cable**

- UL style 2464, 6c×No.20AWG, ( 80°C 300V )

**Identification of wire**

- The identification of wire is made by the color and white line printed on the wire.

No.	Color of Insulator	No.	Color of Insulator
1	Orange / White	4	Brown
2	Blue / White	5	Blue
3	Brown / White	6	Orange



**Identification of terminal numbers**

- When wiring, the identification of terminal number on each contact is made by colored wire.
- The following shows a safety (main) contact and an auxiliary contact for three contacts and two contacts types.

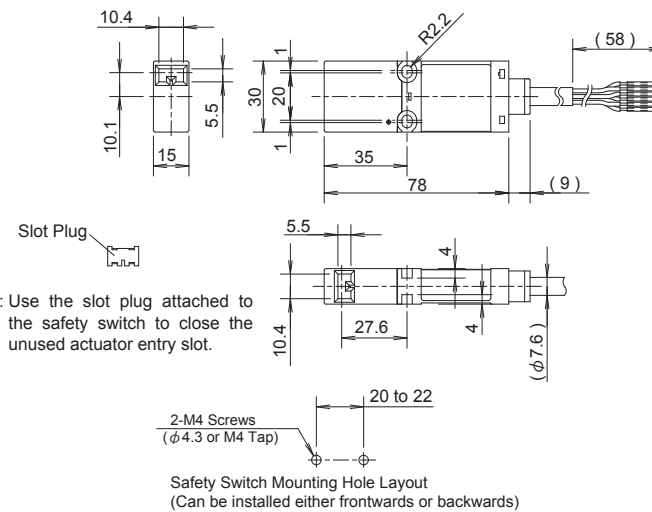


- When wiring, cut unnecessary wires such as dummy insulator (black) and / or unused wire to avoid incorrect wiring.

**7 Dimensions**

**Safety switch**

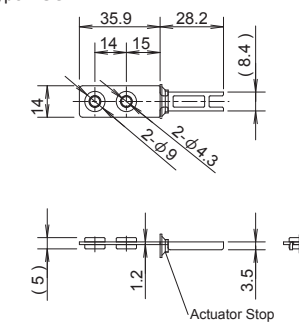
Type : SG-A1-□



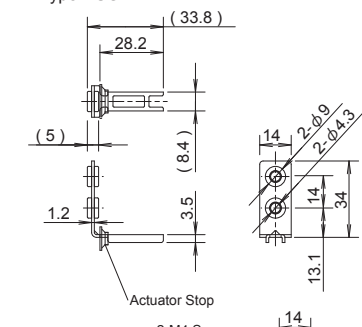
Note: Use the slot plug attached to the safety switch to close the unused actuator entry slot.

**Actuator**

Type : SG-K11

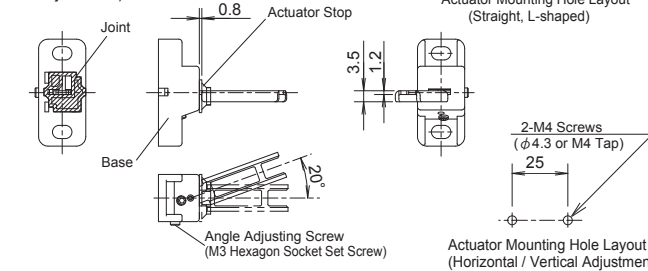


Type : SG-K12

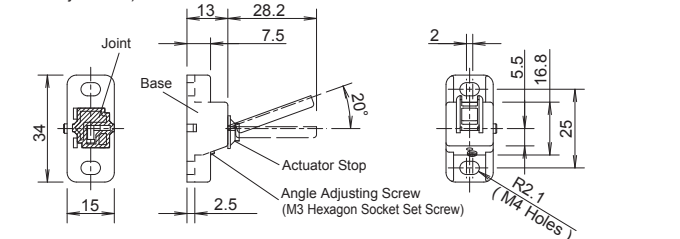


Type : SG-K13

(Horizontal Adjustment)

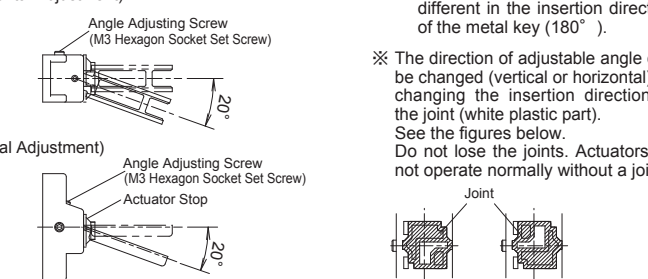


(Vertical Adjustment)

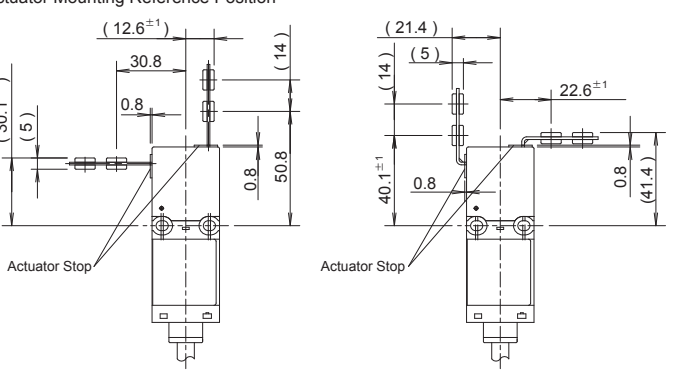


Type : SG-K14

(Horizontal Adjustment)



(Vertical Adjustment)



Note: SG-K13 and SG-K14 are different in the insertion direction of the metal key (180°).

※ The direction of adjustable angle can be changed (vertical or horizontal) by changing the insertion direction of the joint (white plastic part). See the figures below. Do not lose the joints. Actuators do not operate normally without a joint.

**8 Precaution for Disposal**

Dispose of SG-A1-□ as an industrial waste.

**9 Contact information for CE**

Panasonic Marketing Europe GmbH Panasonic Testing Center  
Winsbergring 15, 22525 Hamburg, Germany

**Panasonic Industrial Devices SUNX Co., Ltd.**

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For sales network, please visit our website.

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## Addition of Information to the Instruction Manual Due to an Update of ISO 14119:2013, One of the Applicable Standards

CIMJE-SGA1 No.0078-90V

Thank you for purchasing a Panasonic product.

Information on the following items will be added to the Instruction Manual of the SG-A1 series due to an update of ISO 14119:2013, one of the applicable standards.

Before using the product, carefully read the attached Instruction Manual and this document for the correct and optimum use of the product. Kindly keep the Instruction Manual and this document in a convenient place for quick reference.

### 1 Type

- Added the following model name information.

Model No. : **SG-A1-03-1**

Door monitor contacts	┌	└	Cable length
<b>03</b> : 3NC			<b>1</b> : 1m
<b>12</b> : 2NC+1NO			<b>5</b> : 5m
<b>02</b> : 2NC			

### 2 Specifications and Ratings

- Added information on the type and coding level to “Specifications and Ratings” .
- Deleted the information on the Low Voltage Directive from the “Applicable Directives” table cell under “Specifications and Ratings” because this product is included in the scope of the Machinery Directive.

Interlocking device Type / the level of coded	Type 2 Interlocking device / low level coded actuator (EN ISO / ISO 14119)
Applicable Directives	Machinery Directive (2006/42/EC)

### Itemized Essentials of EU Declaration of Conformity

**Manufacturer's Name:** Panasonic Industrial Devices SUNX Co., Ltd.  
**Manufacturer's Address:** 2431-1, Ushiyama-cho, Kasugai, Aichi 486-0901, Japan  
**EU Representative's Name:** Panasonic Marketing Europe GmbH Panasonic Testing Center  
**EU Representative's Address:** Winsbergring 15, 22525 Hamburg, Germany  
**Product:** Safety Door Interlock Switch  
**Model Name:** SG-A1 Series  
**Trade Name:** Panasonic  
**Application of Council Directive:**  
- 2006/42/EC Machinery Directive  
- 2011/65/EU RoHS Directive  
**Applicable standards:**  
- EN 60947-5-1:2017  
- GS-ET-15E:2019  
- EN IEC 63000:2018

## Panasonic Corporation

Panasonic Industrial Devices SUNX Co., Ltd.  
<https://panasonic.net/id/pidsx/global>

Please visit our website for inquiries and about our sales network.