

**Panasonic**

INSTRUCTION MANUAL

Safety Door Switch / Ultra-slim SG-A1 Series

MJE-SGA1 No.0078-94V

Thank you very much for purchasing Panasonic products. 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.

1 SAFETY CAUTIONS

Always observe

⚠WARNING

Risk of death or serious injury.

⚠CAUTION

Risk of minor injury or property damage.

2 TYPE

Model No. : SG-A1-03-1

Door monitor contacts

03 : 3NC

12 : 2NC+1NO

02 : 2NC

Cable length

1 : 1m

5 : 5m

3 SPECIFICATIONS AND RATINGS

Applicable Standards		EN 60947-5-1:2017, GS-ET-15:2019			
Standards for Use		IEC 60204-1 / EN 60204-1, ISO 14119, EN ISO 14119, IEC 60947-5-1, UL 508, CSA C22.2 No. 14			
Interlocking device Type / the level of coded		Type 2 Interlocking device / low level coded actuator (EN ISO / ISO 14119)			
Conformity Directive(s)		Machinery Directive (2006/42/EC), Supply of Machinery (Safety) Regulations (2008/1597)			
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>	AC	Resistive load(AC-12)	30V	125V	250V
			-	2.5A	1.5A
		Inductive load(AC-15)	-	1.5A	0.75A
		Resistive load(DC-12)	2.5A	1.1A	0.55A
DC	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/s²			
	Damage Limits	1000m/s²			
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			
B <sub>10L</sub>		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) TUV rating

AC15: 0.75A, 240 V AC

DC13: 0.27A, 250 V DC

DC13: 2.3A, 30 V DC

(2) UL , c-UL rating

C300 240 V AC, 0.75 A : Pilot duty

Q300 250 V DC, 0.27 A : Pilot duty

4 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.

Notes: 1) When inserting an actuator into the slot, make sure to arrange the shapes in the same direction, as shown on the right.

5 PRECAUTIONS 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/s² 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 dose 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.

6 ADJUSTMENTS

Minimum Radius of Hinged Door

When the center of the hinged door is on the extension line of the actuator mounting surface.

When the center of the hinged door is on the extension line of the contact surface of actuator and safety switch.

SG-K12

Minimum Radius 230mm

Door Hinge

Minimum Radius 230mm

Door Hinge

Minimum Radius 160mm

Door Hinge

Minimum Radius 160mm

Door Hinge

SG-K13

Minimum Radius 70mm

Door Hinge

Minimum Radius 70mm

Door Hinge

SG-K14

Minimum Radius 70mm

Door Hinge

Minimum Radius 70mm

Door Hinge

SG-K13

Minimum Radius 50mm

Door Hinge

Minimum Radius 50mm

Door Hinge

SG-K14

Minimum Radius 50mm

Door Hinge

Minimum Radius 50mm

Door Hinge

Labels and dimensions for hinged door adjustments.

7 WIRING

Contact Configuration and Operation

SG-A1-02-□

2NC

11 12

31 32

SG-A1-12-□

2NC-1NO

21 22

31 32

SG-A1-03-□

3NC

11 12

21 22

31 32

0.8 (Actuator Mounting Reference Position)

Approx. 5.5

Approx. 5.8

Approx. 28.2

(Travel:mm)

Actuator Completely Inserted

Actuator Pulled Out

Specifications of cable

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

Identification of wire

No.

1

2

3

4

5

6

Color of Insulator

Orange / White

Blue / White

Brown / White

Brown

Blue

Orange

Colored Insulator

Jacket

Dummy Insulator (black)

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.

2NC

BU 11

OG 31

12 BU / WH ⊕

32 OG / WH ⊕

2NC-1NO

BU 11

BN 21

OG 33

12 BU / WH ⊕

22 BN / WH ⊕

34 OG / WH ⊕

3NC

BU 11

BN 21

OG 31

12 BU / WH ⊕

22 BN / WH ⊕

32 OG / WH ⊕

8 DIMENSIONS (mm)

Safety switch

Type : SG-A1-□

10.4

10.1

15

5.5

30

20

1

35

78

(58)

(9)

10.4

27.6

4

4

(ø7.6)

Slot Plug (Note1)

Safety Switch Mounting Hole Layout

2-M4 Screws (ø4.3 or M4 Tap)

20 to 22

9 PRECAUTION FOR DISPOSAL

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

10 CE MARKING DECLARATION OF CONFORMITY

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 Centre

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 GS-ET-15 EN IEC 63000

Itemized Essentials of UK Declaration of Conformity

Manufacturer's Name: Panasonic Industrial Devices SUNX Co., Ltd.

Manufacturer's Address: 2431-1, Ushiyama-cho, Kasugai, Aichi 486-0901, Japan

Authorized Representative: Panasonic Testing Centre on behalf of Panasonic UK

Panasonic UK, a branch of Panasonic Marketing Europe GmbH

Maxis 2, Western Road, Bracknell, Berkshire, RG12 1RT

Product Name: Safety Door Interlock Switch

Trade Name: Panasonic

Model Number: SG-A1 Series

Statutory Instruments: 2008 No.1597 Supply of Machinery (Safety) Regulations 2008 2012 No.3032 RoHS Regulations 2012

Designated Standards: EN 60947-5-1 GS-ET-15 EN IEC 63000

11 UKCA MARKING DECLARATION OF CONFORMITY

Itemized Essentials of UK Declaration of Conformity

Manufacturer's Name: Panasonic Industrial Devices SUNX Co., Ltd.

Manufacturer's Address: 2431-1, Ushiyama-cho, Kasugai, Aichi 486-0901, Japan

Authorized Representative: Panasonic Testing Centre on behalf of Panasonic UK

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Designated Standards: EN 60947-5-1 GS-ET-15 EN IEC 63000

12 DIMENSIONS (mm)

Actuator Mounting Reference Position

Actuator Stop

Actuator Stop

Actuator Mounting Hole Layout (Straight, L-shaped)

2-M4 Screws (ø4.3 or M4 Tap)

Actuator Mounting Hole Layout (Horizontal / Vertical Adjustment)

2-M4 Screws (ø4.3 or M4 Tap)

Actuator Mounting Reference Position (Vertical Adjustment)

Actuator Stop

Actuator Stop

Actuator Mounting Hole Layout (Horizontal / Vertical Adjustment)

2-M4 Screws (ø4.3 or M4 Tap)

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