

# Safety Mats & Edges

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# Safety Edges

Quick Link

S824

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## Safety Edges (SGE & SCS Series Profiles)

- Profile materials NBR (SCS series only), EPDM or TPE
- Available in six sizes for SGE Series and two sizes for SCS Series

### Applicable Controllers

- SCC-1224 Single-Channel Controller
- SCC-1224ND Single-Channel Controller



SCS

Quick Link

S825

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## Description

Safety edges are used on edges of guards and gates at possible crushing or shearing points. They are used on gates, machines, and handling equipment to protect people and equipment. Our SGE Series safety edges use the innovative design of co-extruded safety contact as an integral part of the safety edge. A complete unit consists of an aluminum mounting channel, the safety contact, and the safety edge. The special shapes of the EPDM, TPE, or NBR rubber profiles protect the safety contact from damage and allows actuation angles to exceed 90 degrees.

The last safety edge in a serial connection is terminated with a resistor, which is continuously monitored by the controller. This allows the entire circuit to be monitored for shorts and wire breaks.

### The SGE Design

SGE series profiles are patented and offer improved technical characteristics with fewer components. Inside the safety edge is the co-extruded switching unit, which consists of two conductive rubber extrusions inside the chamber and a high-insulating material EPDM or TPE outer. Inside of each conductive rubber extrusion is a copper wire with low-resistance evaluation. The molded wiring plug at each end ensures the constant contact of the two conductive rubber extrusions of the switching unit. The end caps seal and protect the safety contact from dirt and water ingress. This innovative design significantly reduces assembly time, saving both time and money.

#### Important features of the SGE profile:

- Fast, accurate response even during lateral application of force
- Fewer components required for complete assembly
- Fast and easy assembly
- Integrated water drain (some models)
- Reduced weight

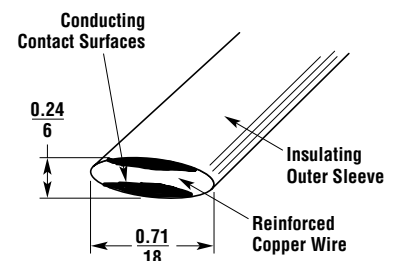
The SGE profile is currently available in six sizes from 8 mm to 65 mm in height. Profiles are available with sealing lips for applications such as doors.



### The SCS Design

In SCS series safety edges, the safety contact is inserted into the switching chamber of the safety edge. The two ends are then sealed with a permanently elastic adhesive and end caps to keep the unit watertight.

All SCS series safety edges are available in NBR only.



## Specifications

	SGE-88	SGE-1510	SGE-125	SGE-225	SGE-245/ SGE-245L	SGE-365 (Black)	SGEY-365 (Yellow)	SCS-2525	SCS-2540
Material:	EPDM	TPE	TPE	EPDM	EPDM	EPDM	TPE	NBR	NBR
Mounting:	DBL Side Tape	Integrated Angle on Profile or SCA-15-9	SCA-15-9	SCA-25/25L	SCA-25/25L	SCA-35/35L	SCA-35/35L	SCA-25/25L	SCA-25/25L
Material Hardness:	68 Shore A	65 Shore A	65 Shore A	68 Shore A	68 Shore A	68 Shore A	68 Shore A	68 Shore A	68 Shore A
Max. Length of a Single Safety Edge:	6.1 m								
Weight:	0.05 kg/m	0.11 kg/m	0.18/0.20 kg/m	0.51/0.5 kg/m	0.77/0.82 kg/m	1.10 kg/m	1.10 kg/m	0.37 kg/m	0.48 kg/m
Enclosure:	IP65								
Mechanical Stability*1:	500 N								
Actuation Distance:	2.1 mm	4.23 mm	7.6 mm	4.5 mm	9.4 mm	5.16 mm	5.16 mm	5.4 mm	4.1 mm
Actuation Force:	70 N with 10 mm/s	88 N with 50 mm/s	76 N	87 N	118 N	72.1 N	72.1 N	134 N	70 N
Maximum Deformation at 400 N:	4.4 mm	4.7 mm	8.6 mm	6.7 mm	17.7 mm	33.78 mm	33.78 mm	11.8 mm	24 mm
Switching Cycles:	10 <sup>4</sup>								
Switching Angle:	2 x 10°	2 x 20°	2 x 30°	2 x 30°	2 x 45°	2 x 45°	2 x 45°	2 x 45°	2 x 30°
Electrical Capacity:	24 V 100 mA								
Operating Temperature:	-10 to 55°C							+5 to 55°C	0 to 55°C
Storage Temperature:	-25 to 75°C								
Max. Series Connection on the Safety Edges:	5 Connections								
Inactive End Region:	20 mm	25 mm	20 mm	40 mm					20 mm
Connecting Cable:	2 Conductors, 34 mm <sup>2</sup>								

\*Actuation forces and distances are tested according to EN 1760-2, Speed 200 mm/s.

\*1 Maximum operating force without damaging the edge.

Specifications are subject to change without notice.

## Chemical Resistance

Features	TPE*	EPDM**	NBR***
Tear Strength (Resistance)	3	3	2
Ultimate Tensile Strength	3	3	2
Rebound Elasticity at 20°C	2	2	
Resistance Against Permanent Deformation	3-4	2	
Abrasion	3	3	2
Elongation at Tear	4-5	3	3
Cold Flexibility	2	2	3
Heat Stability	4	2	2
Oxidation Stability	1	1	3
UV Stability	1	1	3
Weather/Ozone Resistance	1	1	3
Flame Resistance	6	6	6
Gas Permeability	3	4	2

KEY:

1 = very good

6 = insufficient

\*TPE: Thermoplastic Elastomer

Models include: SGE-125, SGEY-365

\*\*EPDM: Ethylene Propylene Rubber: Good resistance to ozone and weathering. Particularly suitable for aggressive chemicals

Models include: SGE-88, SGE-1510, SGE-225, SGE-245, SGE-365

\*\*\*NBR: Nitrile Butadiene Rubber: Good resistance to petroleum oils, aromatic hydrocarbons, mineral oils, and vegetable oils.

Models include: SCS-2525, SCS-2540

Features	TPE*	EPDM**	NBR***
Water Resistance	1	1-2	1
Diluted Acids	1	2	3
Diluted Bases	1	2	2
Non-Oxidizing Acids	2	2	3
Oxidizing Acids	2	4	5
ASTM Oil #3	2	6	1
Vegetable Oils	1-2	5	1
Organic Solvents		2	5
Ester Solvents	2-3	2	
Ketone Solvents (Containing Oxygen)	2-3	3	5
Aliphatic Hydrocarbons (Gasoline)		5	1
Aromatic Hydrocarbons		6	2-3
Hydrogen Hydrocarbons		6	5
Hydrocarbons	2-3	5-6	
Alcohol	1	1	5

KEY:

1 = No Effects, Permanent Contact

2 = Few Effects, Some Contact

3 = Medium Effects, Some Contact

4 = Noticeable Effects, Reduced Contact

5 = Severe Effects, Very Brief Contact

6 = Extreme Effects, Avoid Contact

## Force Distance

### SGE-125:

Characteristic Values for Test Speed v=10 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	27.3
Actuating Distance Sb (mm)	1.8
Overtravel Distance Sv @ 250N in MM	8.3
Overtravel Distance Sv @ 400N in MM	10.6
Overtravel Distance Sv @ 600N in MM	11.5

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-125:

Characteristic Values for Test Speed v=100 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	33
Actuating Distance Sb (mm)	1.9
Overtravel Distance Sv @ 250N in MM	10.1
Overtravel Distance Sv @ 400N in MM	11.1
Overtravel Distance Sv @ 600N in MM	12.2

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-225:

Characteristic Values for Test Speed v=10 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	56.7
Actuating Distance Sb (mm)	3.9
Overtravel Distance Sv @ 250N in MM	2.3
Overtravel Distance Sv @ 400N in MM	6.7
Overtravel Distance Sv @ 600N in MM	12.0

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-225:

Characteristic Values for Test Speed v=100 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	62.7
Actuating Distance Sb (mm)	4.4
Overtravel Distance Sv @ 250N in MM	2.7
Overtravel Distance Sv @ 400N in MM	7.2
Overtravel Distance Sv @ 600N in MM	12.0

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-245:

Characteristic Values for Test Speed v=10 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	67.7
Actuating Distance Sb (mm)	7.4
Overtravel Distance Sv @ 250N in MM	15.8
Overtravel Distance Sv @ 400N in MM	18.3
Overtravel Distance Sv @ 600N in MM	21.7

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-245:

Characteristic Values for Test Speed v=100 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	82.7
Actuating Distance Sb (mm)	7.8
Overtravel Distance Sv @ 250N in MM	15.2
Overtravel Distance Sv @ 400N in MM	17.7
Overtravel Distance Sv @ 600N in MM	21.9

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-365:

Characteristic Values for Test Speed v=10 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	78.2
Actuating Distance Sb (mm)	5.16
Overtravel Distance Sv @ 250N in MM	29.82
Overtravel Distance Sv @ 400N in MM	33.78
Overtravel Distance Sv @ 600N in MM	36.51

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

### SGE-365:

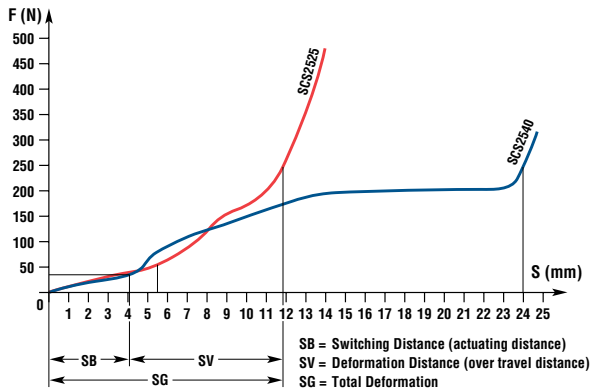
Characteristic Values for Test Speed v=100 mm/s

Test Temperature	+20°C
Actuating Force Fa (N)	107.7
Actuating Distance Sb (mm)	6.23
Overtravel Distance Sv @ 250N in MM	28.37
Overtravel Distance Sv @ 400N in MM	32.76
Overtravel Distance Sv @ 600N in MM	35.34

Tested according to EN 1760-2, test unit round 80 mm, actuating point C3.

## Force Distance (continued)

### SCS-2525 and SCS-2540



## Bending Angles and Radii

The flat aluminum mounting channel must be prepared at the factory if it has to be bent. To order bending safety edges, please consult OMRON Automation and Safety.

### Bending angles for different assembly arrangements:

Type	Bending Angle		
	A	B	C
SGE-88	45°	30°	30°
SGE-125	45°	20°	20°
SGE-1510	45°	20°	15°
SGE-225	45°	20°	30°
SGE-245	45°	10°	20°
SGE-245L	45°	10°	20°
SGE-365	45°	10°	15°

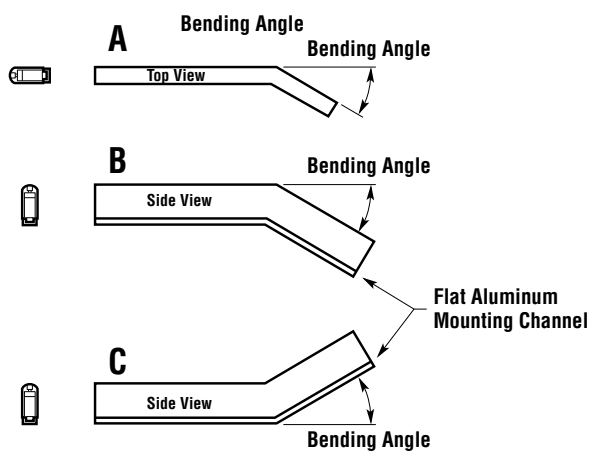


Figure 1

Notes:  
 By bending the safety edges, the profiles with sealing lip becomes compressed and corrugated.  
 Bending angle and radii are not part of the tests complying with EN1760-2 and EN12978.

### Bending radii for different assembly arrangements:

Type	Bending Radius (mm)		
	Fig. 2	Fig. 3	Fig. 4
SGE-88	200	200	50
SGE-125	200	200	200
SGE-1510	200	200	200
SGE-225	300	400	200
SGE-245	400	500	200
SGE-365	800	800	500

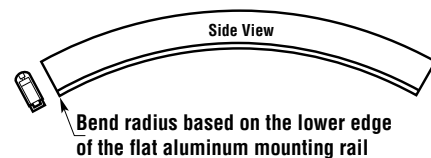


Figure 2

Flat Aluminum Mounting Channel

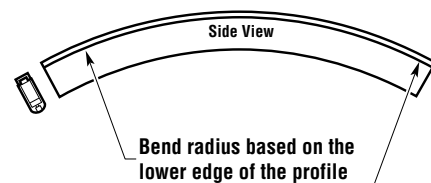


Figure 3

Flat Aluminum Mounting Channel

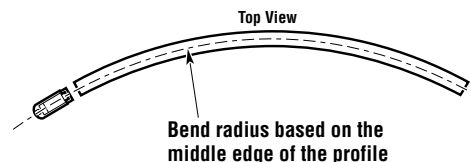
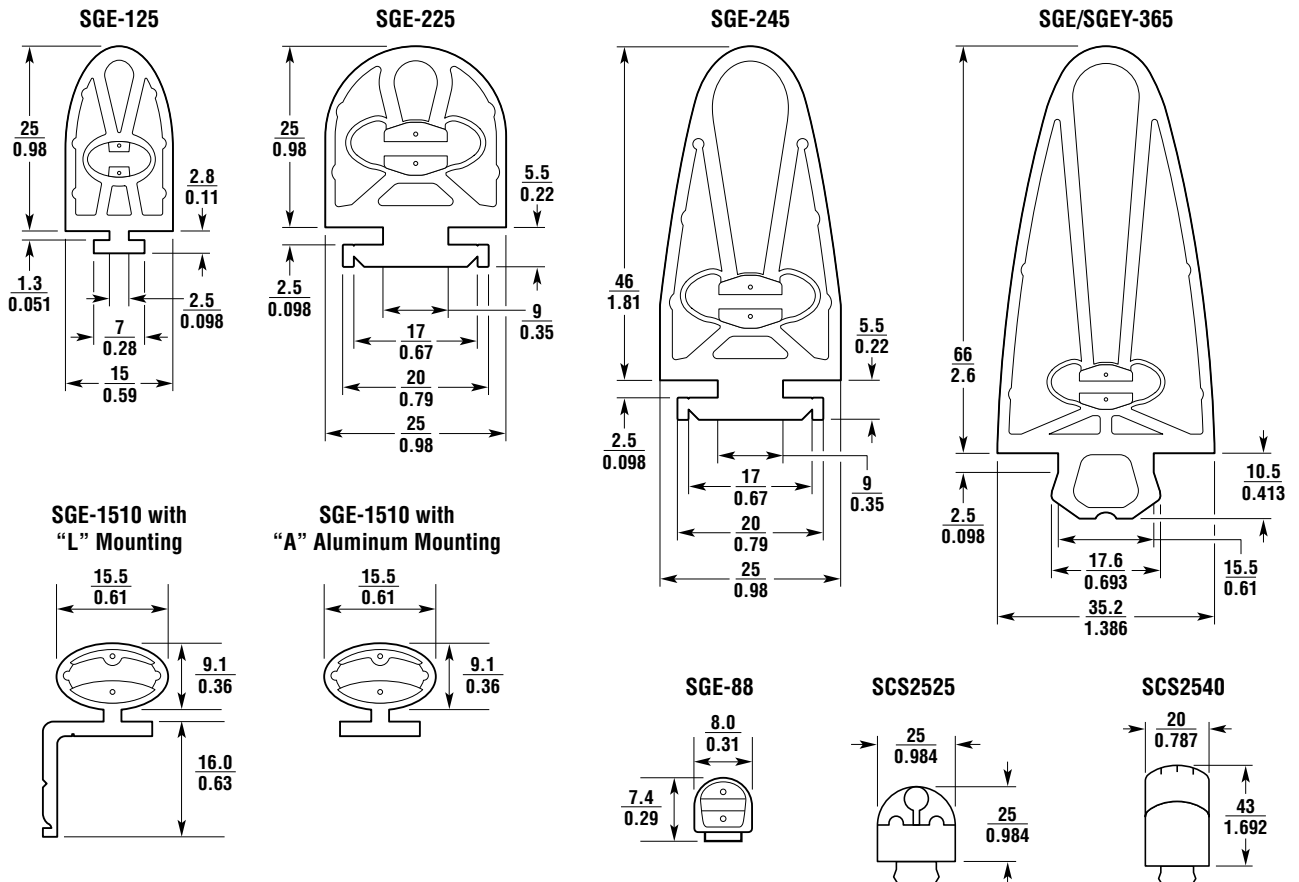


Figure 4

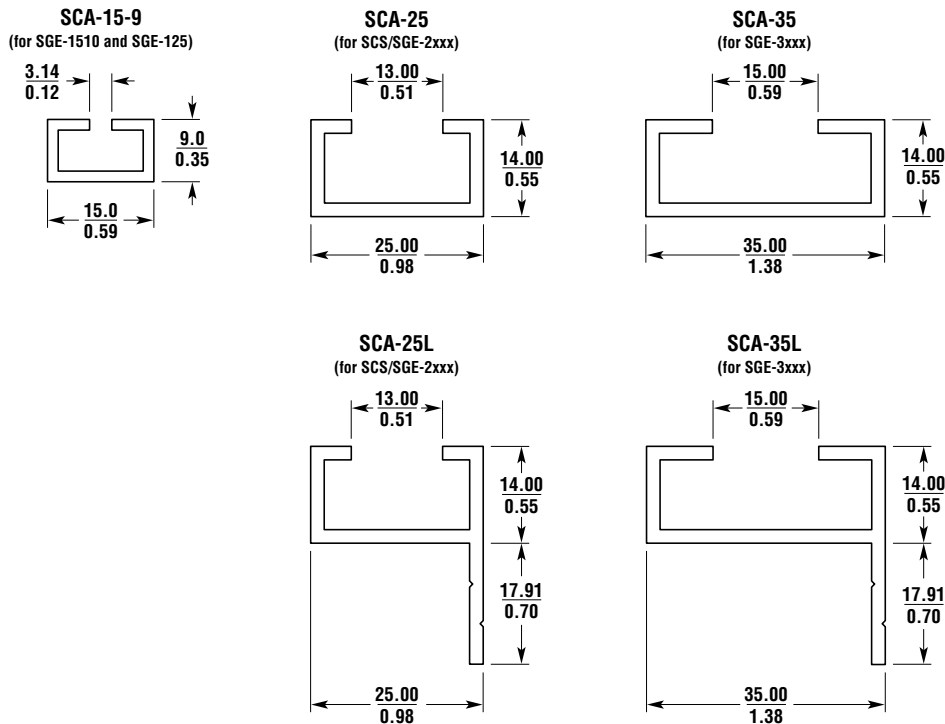
Dimensions

(mm/in.)

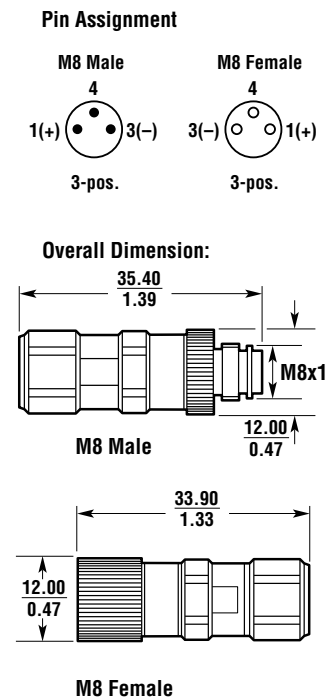
Safety Edges



Aluminum Fastening Profiles

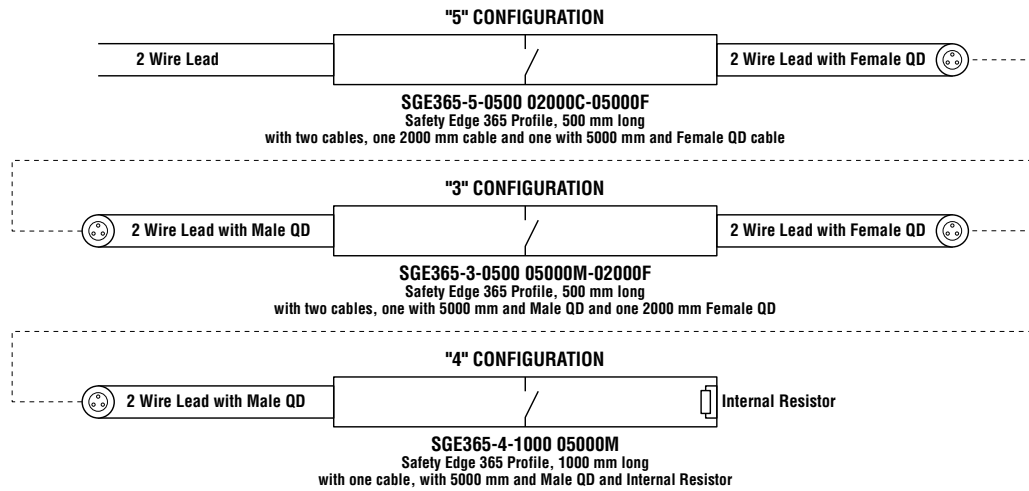


Cable Connectors

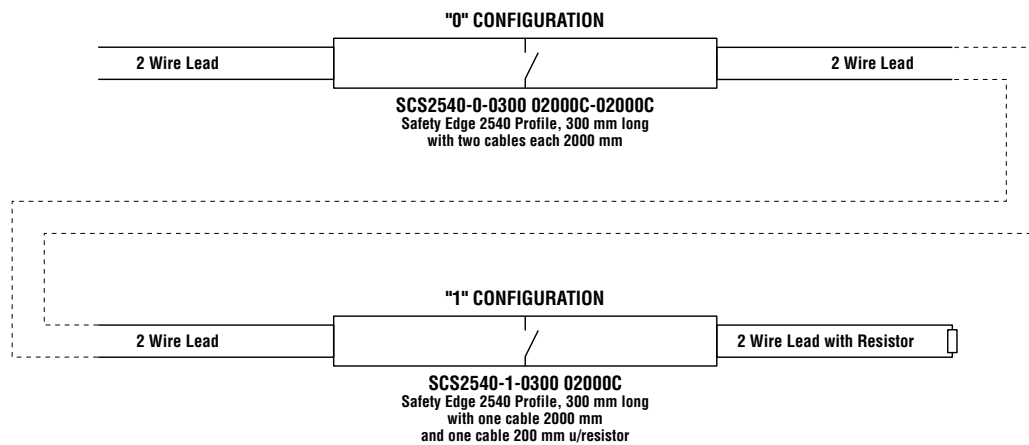


## Typical Installation

### APPLICATION OF 3 EDGES TO FORM 1 SYSTEM

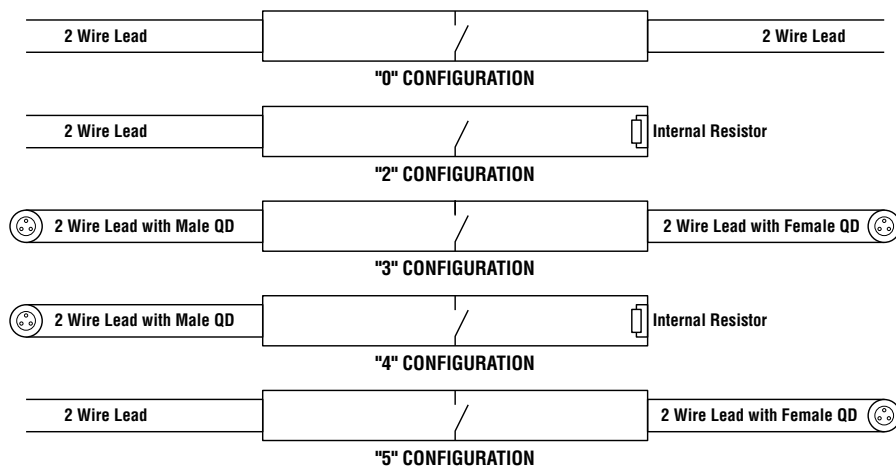


### APPLICATION OF 2 EDGES TO FORM 1 SYSTEM WITH EXTERNAL RESISTOR



## Wiring

### Available Configurations



## Ordering

### SGE Series

SGE - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]	
<b>Safety Edge Configuration*</b>	
<b>88</b>	8 mm x 8 mm
<b>1510</b>	15 mm x 10 mm
<b>125</b>	15 mm x 25 mm
<b>225</b>	25 mm x 25 mm
<b>245</b>	25 mm x 45 mm
<b>245L</b>	25 mm x 45 mm, with Sealing Lip
<b>365</b>	35 mm x 65 mm, black
<b>Y365</b>	35 mm x 65 mm, yellow
<b>Wiring Configuration</b>	
<b>0</b>	Two 2-wire connections
<b>2</b>	One 2-wire connection and one internal resistor connection
<b>3</b>	One quick-disconnect male and one quick-disconnect female connector
<b>4</b>	One quick-disconnect male and one internal resistor connection
<b>5</b>	One quick-disconnect female and 2-wire connection
<b>Length</b>	Specify length in increments of 10 mm, from 150 mm up to 6100 mm, use 4-digits
<b>Mounting**</b>	(blank) Standard Mounting (all except 1510) <b>L</b> Angle aluminum mounting channel (all except 1510 and 125) <b>L</b> Rubber lip mounting for ONLY SGE-1510 <b>A</b> Aluminum mounting for ONLY SGE 1510 <b>N</b> No mounting channel supplied
<b>First Cable Length</b>	Specify length in mm from 100 to 10,000 using 5 digits*** End with "C" for wiring configurations 0, 2 or 5. End with "M" for wiring configurations 3 or 4. Cables exit bottom of profile, except 125 that exits on right side looking at end.
<b>Second Cable Length</b>	Specify length in mm from 100 to 10,000 using 5 digits*** End with "C" for wiring configuration 0. End with "F" for wiring configurations 3 or 5. Cables exit bottom of profile, except 125 that exits on left side looking at end.

### SCS Series

SCS - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]	
<b>Safety Edge Configuration*</b>	
<b>2525</b>	25 mm x 25 mm (Available in NBR only)
<b>2540</b>	25 mm x 40 mm (Available in NBR only)
<b>Wiring Configuration</b>	
<b>0</b>	Two 2-wire connections
<b>1</b>	One 2-wire connection and one external resistor connection
<b>2</b>	One 2-wire connection and one internal resistor connection
<b>3</b>	One quick-disconnect male and one quick-disconnect female connector
<b>4</b>	One quick-disconnect male and one internal resistor connection
<b>5</b>	One quick-disconnect female and 2-wire connection
<b>Length</b>	Specify length in increments of 10 mm up to 6100 mm, use 4-digits
<b>Mounting**</b>	(blank) Standard Mounting <b>L</b> Angle aluminum mounting channel <b>N</b> No mounting channel supplied
<b>First Cable Length</b>	Specify length in mm from 100 to 10,000 using 5 digits***
<b>Second Cable Length</b>	Specify length in mm from 100 to 10,000 using 5 digits***

\* Standard material for most configurations is EPDM (Exception: Standard material for the SGE-125 and SGEY-365 are TPE; SCS-2525; and SCS-2540 are available in NBR only).

\*\* Angle mounting channel is available for all profiles except the SGE-125 and SGE-1510

\*\*\* Examples: SGE-125-2-0150 05000C  
SGE-125-3-0150 05000M-05000F  
150 mm cable with Male QD = 00150M

\*\*\*\* For non-standard cable exit contact factory



# Safety Bumpers

## Safety Bumpers

- Foam rubber covered in polyurethane, mounted on an aluminum base
- Available in lengths up to 3000 mm;  
Standard sizes:  
53 mm x 100 mm  
100 mm x 200 mm  
150 mm x 300 mm  
200 mm x 400 mm



# Safety Edge Controllers



## Single-Channel Safety Edge Controllers

for use with All Safety Edges and Safety Bumpers

- Power requirements
  - 120 VAC or 24 VDC is acceptable for the SCC-1224 single channel units
- Input
  - Single channel units accept a single two-wire edge or bumper system
- Output
  - Single channel units have two safety outputs and one auxiliary output for signaling
- External Device Monitoring –EDM is provided on all units with a N/C loop between Z1 and Z2
- Monitored Reset Modes
  - Monitored manual reset mode that requires closure of the reset circuit followed by opening of the circuit is available on all units
  - Automatic reset mode that occurs upon closure of the reset circuit is available on all units
- Delayed Auxiliary Output – Delayed opening of the auxiliary output for reversal of a door or gate may be selected on all units except SCC1224ND



## Specifications

SCC-1224 & SCC-1224ND DIN Mount, 115 VAC or 24 VAC/DC Single Input, Safety Output and Aux.	
<b>Performance</b>	
Category 3 Safety Device:	Yes
Operating Area:	Up to 5 sensing devices with a total cable length of max. 25 m in series
Response Time:	< 13 msec.
Indications:	Power – Main power supply = Green Actuate – Edge is depressed = Yellow Fault – Detect an irregular signal = Red Aux. Actuate – Activate Aux. output = Orange
Operational Modes (Selectable):	Automatic Start, Start/Restart Interlock
<b>Electrical</b>	
Power Input:	115 VAC, 50/60 Hz, 3 VA or 24 VAC/DC ± 10%, 1.5 W
Safety Output:	2 N/O Relay
Maximum Switched Current:	4 A, 250 VAC / 4 A, 30 VDC
Auxiliary Relay Output:	SCC-1224: Activates after approx. 1 s for approx. 3 s if the sensing device is actuated or faulty; SCC-1224ND: Activates if the sensing device is actuated or if a sensing device fault is detected
Maximum Switched Current:	4A, 250 VAC / 4A, 30 VDC
Terminal Blocks:	Cage Clamp Terminal Strip, Wire Size 0.75-1.5 mm <sup>2</sup>
Input Connections:	1-2 wire edge sensor circuit
Input Resistance:	8.2 K ohm
Input Voltage:	6 V ±2%
Input Current:	1 mA
<b>Mechanical</b>	
Enclosure:	Polyamide PA6.6, Self-extinguishing in accordance with UL-94-V2
Mounting:	35 mm DIN rail
<b>Environmental</b>	
Protection Rating:	IP20
Operating Temperature:	-20 to 55°C (-4 to 131°F)
Shipping Weight:	210 g (7.4 oz.)
Standards Conformity:	CE, TÜV
Designed to Meet or Exceed:	Category 3, EN13849-1

Specifications are subject to change without notice.



For complete specifications and additional models and accessories visit [www.omron247.com](http://www.omron247.com)



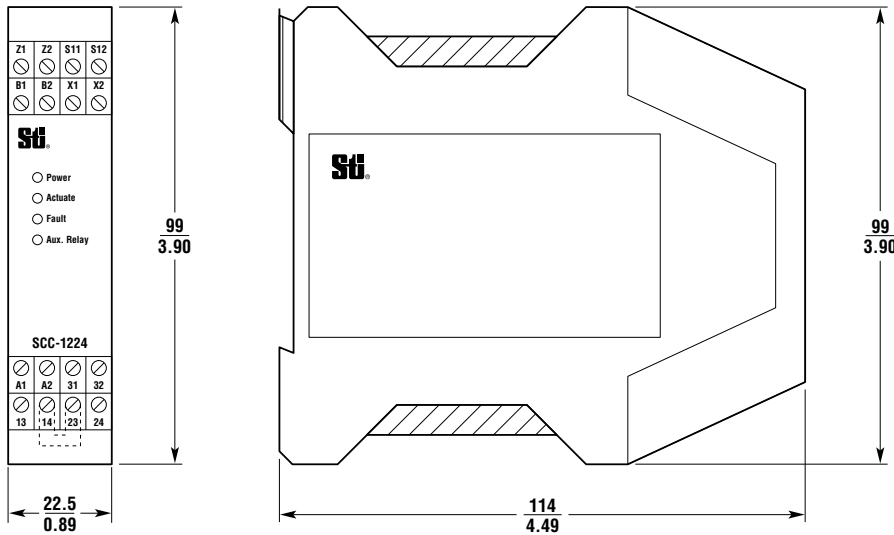
## Specifications

<b>SCC-1224 &amp; SCC-1224ND DIN Mount, 115 VAC or 24 VAC/DC Single Input, Safety Output and Aux.</b>	
<b>Performance</b>	
Category 3 Safety Device:	Yes
Operating Area:	Up to 5 sensing devices with a total cable length of max. 25 m in series
Response Time:	< 13 msec.
Indications:	Power – Main power supply = Green Actuate – Edge is depressed = Yellow Fault – Detect an irregular signal = Red Aux. Actuate – Activate Aux. output = Orange
Operational Modes (Selectable):	Automatic Start, Start/Restart Interlock
<b>Electrical</b>	
Power Input:	115 VAC, 50/60 Hz, 3 VA or 24 VAC/DC ± 10%, 1.5 W
Safety Output:	2 N/O Relay
Maximum Switched Current:	4 A, 250 VAC / 4 A, 30 VDC
Auxiliary Relay Output:	SCC-1224: Activates after approx. 1 s for approx. 3 s if the sensing device is actuated or faulty; SCC-1224ND: Activates if the sensing device is actuated or if a sensing device fault is detected
Maximum Switched Current:	4A, 250 VAC / 4A, 30 VDC
Terminal Blocks:	Cage Clamp Terminal Strip, Wire Size 0.75-1.5 mm <sup>2</sup>
Input Connections:	1-2 wire edge sensor circuit
Input Resistance:	8.2 K ohm
Input Voltage:	6 V ±2%
Input Current:	1 mA
<b>Mechanical</b>	
Enclosure:	Polyamide PA6.6, Self-extinguishing in accordance with UL-94-V2
Mounting:	35 mm DIN rail
<b>Environmental</b>	
Protection Rating:	IP20
Operating Temperature:	-20 to 55°C (-4 to 131°F)
Shipping Weight:	210 g (7.4 oz.)
Standards Conformity:	CE, TUV
Designed to Meet or Exceed:	Category 3, EN13849-1

Specifications are subject to change without notice.

## Dimensions

(mm/in.)



## Installation

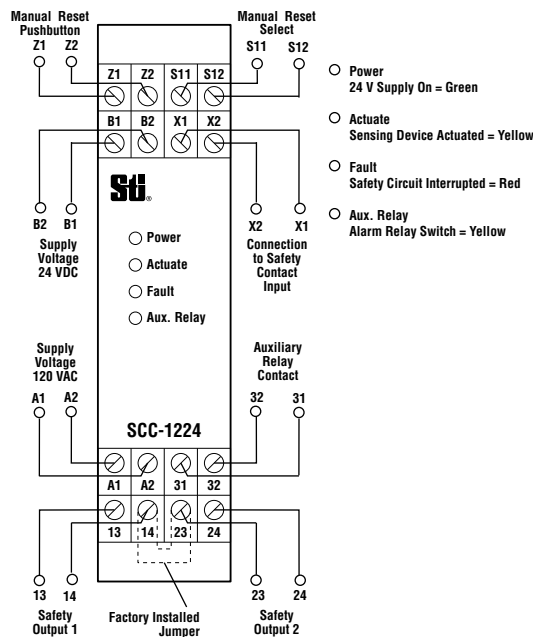
### Mounting

The SCC controllers are DIN rail mounted.

### Wiring

As with any electrical apparatus, caution must be used when installing, connecting and operating the SCC controllers and safety edges. Please observe all local electrical codes.

SCC-1224 and SCC-1224ND



## Ordering

Description	Model Number	Part Number
Single-Channel Safety Edge Din-Mount Controller for use with all safety edges, 120 VAC or 24 VDC; Auxiliary contact closes on activation of safety edge for 2 to 3 seconds then opens (even if edge remains activated)	SCC-1224	43872-0020
Single-Channel Safety Edge Din-Mount Controller for use with all safety edges, 120 VAC or 24 VDC; Auxiliary contact closes when the edge is activated and remains closed as long as the edge is activated	SCC-1224ND	43872-0021

