» Expert Area
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» Mats and Edges
» Door Switches
» Emergency Stop Devices
» Switches and Operator Controls
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Safety Mats & Edges

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<td>Safety Edge Controllers</td>
<td>E-33</td>
</tr>
</tbody>
</table>
Quick-Disconnect Universal Safety Mat System

Heavy-Duty Four-Wire Presence Sensing Mats with Removable Cable, Category 3 Controllers and Perimeter Trim

System
- When UMQ series mats are combined with an MC3, MC4 or MC6 controller (with complete diagnostics), the result is a system that meets the standard EN 1760-1:1998 and is entitled to display the CE mark. See below for an overview of the various components.

UMQ Series Mat
- Fork lift traffic of 270 lbs. per square inch
- IP67 rated
- Mat flammability self extinguishing, meets UL94VO
- Single-piece molded construction
- Black or yellow color
- Damage to cables during installation is eliminated by positioning the cables after mat installation
- Easy cable replacement
- Six cable location options offer the ability to configure where cable exits

Controllers
- Safety category 3 devices
- DIN-rail mount (MC3)
- NEMA controllers (MC4, MC6)
- 24 VDC or with universal power supply 100 to 240 VAC

Trim
- Two-part perimeter and joining trim simplifies installation and provides a custom appearance
- Two options for trim kit corners: Mitered and molded

Description

An Omron Quick-Disconnect Universal Mat system (UMQ series mat combined with an MC3, MC4 or MC6) offers a simple method for guarding personnel around hazardous machines. A Quick-Disconnect Universal Mat system offers freedom, flexibility, and reduced operator fatigue when compared with traditional guarding methods such as interlocked fences, pullback restraints or perimeter barriers.

Full visibility and access to the work area is maintained. There is no need to worry about personnel forgetting to replace mechanical barriers or close gates.

UMQ Series safety mat incorporates a design that features a cable quick disconnect located on the mat. This allows the cable to be attached after the mat is installed in order to minimize damage to the cable during installation. The patented connector is designed and tested to meet IP67 requirements.

How the System Works

The operation of a Quick-Disconnect Universal Mat system is easy to understand. The mat is a simple, normally open switch. When a specified minimum weight is applied to the mat the “switch” closes. This sends a signal to the controller which, in turn, sends a stop signal to the guarded machine.

Each mat presents four wires to the controller. This provides the redundancy required to monitor the wiring for open circuits due to incorrect wiring or physical damage to the wires.

In order to meet many national safety regulations, Omron offers trim to secure the mat to the floor so that it cannot be easily relocated and therefore become ineffective.
Mat Specifications

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mat Cover Material:</td>
</tr>
<tr>
<td>Mat Type:</td>
</tr>
<tr>
<td>Mode:</td>
</tr>
<tr>
<td>Activation Force:</td>
</tr>
<tr>
<td>Maximum Load:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mechanical Life:</td>
</tr>
<tr>
<td>Mat Cable:</td>
</tr>
<tr>
<td>Mat Weight:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection:</td>
</tr>
<tr>
<td>Operating Temperature:</td>
</tr>
<tr>
<td>Mat Flammability:</td>
</tr>
<tr>
<td>Operating Humidity:</td>
</tr>
<tr>
<td>Mat Chemical Resistance*:</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approvals:</td>
</tr>
</tbody>
</table>

Mat Selection

Multiple UMQ series mat sizes are offered. A system can easily be configured to meet almost any guarding requirement.

<table>
<thead>
<tr>
<th>Standard Mat Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widths:</td>
</tr>
<tr>
<td>Lengths:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metric Mat Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widths:</td>
</tr>
<tr>
<td>Lengths:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Custom Mat Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widths:</td>
</tr>
<tr>
<td>Lengths:</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice.
Trim Selection

Several choices are available in trim selection and can be customized to a specific application.

Two-Part Ramp Trim with Yellow PVC Cover

This trim simplifies routing of cables and replacement of damaged mats. To position the mats correctly, place all of the mats in the approximate position, place the joining trim between the mats, then temporarily place the cover on the joining trim. Square the mats by sliding the ramp trim under the mats. When all of the mats are correctly positioned, anchor the perimeter trim to the floor. After the wires have been routed, a rugged cover of highly visible, safety yellow PVC is snapped into place. Corners can either be mitered or be our exclusive molded corners. (See illustrations on this page.)

Two-Part Ramp Trim with Aluminum Cover

This trim is the same as above except that the PVC cover is replaced with an aluminum cover that is attached by screws to the base. (See the Dimensions Section of this datasheet for details.)

Two-Part Active Joining Trim

Similar in concept to the two-part ramp trim, this trim provides an "active" joint where the perimeters of two mats adjoin each other. When a person steps on the surface cover of the active joining trim, the Universal Mat system will detect their presence and send a stop signal to the guarded machine.

Aluminum Blunt Trim

Used to finish off the edge of a mat installation near a wall or machine. Helps hold mats in place.

Aluminum Ramp Trim

This single part aluminum ramp trim is available for areas where the two part ramp trim may not be suitable.

Molded Corners

Eliminates the need to miter the corners of perimeter trim. Designed to mate with Omron two-part ramp trim.

Applications

Presence sensing safety mats are used to monitor an entire hazardous area. They offer flexibility, quick access and may frequently be the most economic choice. Other options for perimeter guarding include interlocked barrier guards and safety light curtains. However, personnel can become trapped inside a barrier guard and safety light curtains only monitor the perimeter, not the hazardous area inside.

Additionally, mats can also simplify routine tasks such as machine setup, maintenance and repair.

Applications can be found throughout industry and typically include the following areas:
- Welding Robots
- Assembly Machinery
- Material Handling
- Packaging Machinery
- Punches
- Presses
- Robotic Work Cells

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- Robotic Work Cells
For complete specifications and additional models and accessories visit www.omron247.com
Mat Dimensions

Two-Part Trim with PVC Cover and Mitered Corners (TKM)

- PVC Trim Cover
- Safety Mat
- Aluminum Trim Base

L = Mat Length
609.6 Shown

(Area Trim Cvr) A = L + 114.8
724.4 Shown

(B) = L + 137.4
746.8 Shown

TOL = -0.381 / +0
-0.015 / +0

STI To Cut Alum Trim "Rib"
25.4 (1.00) Section Here

Two-Part Trim with PVC Cover and Molded Corners (TKC)

- PVC Trim Cover
- Safety Mat
- Corner

L = Mat Length
138.2

(Overall Length) C = L + 138.2
5.44

STI To Cut Alum Trim "Rib"
25.4 (1.00) Section Here

For complete specifications and additional models and accessories visit www.omron247.com
Mat Dimensions (continued)

Two-Part Trim with Aluminum Cover and Mitered Corners (TKAT)

MAT FASTENING DETAIL
SS Flat Head Phillips Thrd Cutting 6-32 Thread, 3/8" Long Screw

Cable Conduit

Note: Use Groove for Hole Location Guide

45°

L = Mat Length / 699.6 Shown
(Alum Trim Cvr) A = L + 
114.8 / 724.4 Shown
TOL =
Ø3.71
0.146
Ø7.14
0.281

127.3 TOL =
± 0.381 / ± 0
± 0.015 / ± 0

Cable
Conduit

4-Cond Cable with MC12DC Male Single Key 4-Term Connector

STI To Cut Alum Trim "Rib" 25.4 (1.00) Section Here

Single-Part Trim Aluminum Trim (TKA)

MAT FASTENING DETAIL
Screw (90705)

Anchor (90706)

Cable Conduit

Drill and Countersink Holes in Groove for (8-32 x 1.25" Screw)

25.4 (1.0) Section of Rib Removed

45°

L = Mat Length
(Alum Trim) A = L +
127.3 TOL =
± 0.381 / ± 0
± 0.015 / ± 0

STI To Cut Alum Trim "Rib" 25.4 (1.00) Section Here

For complete specifications and additional models and accessories visit www.omron247.com
Mat Measurement

Mat Dimension - Base = Top Surface Dimension + 11.2 (0.44)
i.e. Top Mat Dimension = 305 (12.00), Mat Base = 316 (12.44)

Mat Cable exits on the side indicated by the first dimension in the model number
i.e. UMS-1254, Cable exits 12" dimension
i.e. UMS-4824, Cable exits 48" dimension

Pin Out Connector

UMQ5, UMQ10, Integral UM Mat Cables

UMPMC

UM-Y-2-1 "Y" Connector
Custom Mats and Trims

Omron makes ordering custom mats and trims easy. Simply send us a sketch of your layout including dimensions. Make note of where you want ramp trim or blunt trim. We’ll work from your sketch to create a detailed drawing of your specifications.

Step 1: Customer Sends a Sketch
Example

Step 2: A Quote Drawing with Dimensions is Created

Step 3: When the Order is Placed, A Detailed Layout Showing all Components of the Trim System is Made
Ordering a UMQ Mat System

A Quick Disconnect Universal Mat System contains at least one mat, a 5 m or 10 m cable, sufficient perimeter and joining trim and a controller. For multiple mat installations using the MC3 controller, the mats are connected in series to the controller. This may be done using the UMDB-6 wiring accessory. When using the MC4 or MC6 controllers, six mats may be connected directly to the controller.

Each component of Quick Disconnect Universal Mat system must be ordered individually.

Mats are available in black or yellow. Yellow mats are denoted by placing a “Y” in the ordering code. The cable location is specified by letter code at the end of the ordering number. Cables must be ordered separately.

To order a Quick-Disconnect Universal Mat System, simply fill in the fields in the model number sequence given.

UMQ Series  Safety Mats & Edges

Standard Mat Ordering Code:

- Information required. Represents mat type and color.

<table>
<thead>
<tr>
<th>Designator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMO</td>
<td>Standard black mat</td>
</tr>
<tr>
<td>UMYQ</td>
<td>Standard yellow mat*</td>
</tr>
<tr>
<td>UMMQ</td>
<td>Metric black mat</td>
</tr>
<tr>
<td>UMMYQ</td>
<td>Metric yellow mat*</td>
</tr>
</tbody>
</table>

Example: UMQ-2460-A
This example is a 24 x 60 in. standard black mat with cable location A.

Metric Mat Ordering Code:

- Information required. Represents the mat size. Dimensions are for active mat area. Mats are an additional 0.5 in. (12 mm) in each dimension. Choose one value from each column.

<table>
<thead>
<tr>
<th>Designator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0500 (500 mm/19.7 in.)</td>
<td>0500 (500 mm/19.7 in.)</td>
</tr>
<tr>
<td>0750 (750 mm/29.5 in.)</td>
<td>0750 (750 mm/29.5 in.)</td>
</tr>
<tr>
<td>1000 (1000 mm/39.4 in.)</td>
<td>1000 (1000 mm/39.4 in.)</td>
</tr>
<tr>
<td>1200 (1200 mm/47.2 in.)</td>
<td>1250 (1250 mm/49.2 in.)</td>
</tr>
<tr>
<td>1500 (1500 mm/59.1 in.)</td>
<td>1500 (1500 mm/59.1 in.)</td>
</tr>
<tr>
<td>1750 (1750 mm/68.9 in.)</td>
<td>1800 (1800 mm/70.9 in.)</td>
</tr>
</tbody>
</table>

*Please consult Omron for mat sizes not listed in the above tables.

For detailed specifications and ordering information on the Universal Mat System, please visit our website.
Ordering (continued)

Ordering Perimeter Trim for a Single Mat**
To order Perimeter Trim for a single mat, simply fill in the fields in the model number sequence given below.

**Standard Perimeter Trim Ordering Code:**
Example: TKM-1266-E
This example is a trim kit with mitered corners to fit a 12 x 66 in. standard mat with cable coming out at location E.

**Metric Perimeter Trim Ordering Code:**
Example: MTKM-0500-0500-E
This example is a trim kit with mitered corners to fit a 500 x 500 mm metric quick disconnect mat with cable coming out at location E.

Information required. Represents the corner style used on the trim kits.

<table>
<thead>
<tr>
<th>Designator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKM</td>
<td>Standard trim kit, 2-part mitered corners with PVC top cover</td>
</tr>
<tr>
<td>TKAT</td>
<td>Standard trim kit, 2-part mitered corners with aluminum top cover</td>
</tr>
<tr>
<td>TKC</td>
<td>Standard trim kit, 2-part with molded corners with PVC top cover</td>
</tr>
<tr>
<td>TKA</td>
<td>Standard trim kit, single part aluminum ramp trim (mitered only)</td>
</tr>
<tr>
<td>MTKM</td>
<td>Metric trim kit with mitered corners</td>
</tr>
<tr>
<td>MTKC</td>
<td>Metric trim kit with molded corners</td>
</tr>
<tr>
<td>MTKAT</td>
<td>Available upon request.</td>
</tr>
</tbody>
</table>

Information required. Represents cable location. See diagram below.

<table>
<thead>
<tr>
<th>Cable Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bottom left corner of 1st mat dimension, 2 in. from top surface of the left edge to center of cable exit</td>
</tr>
<tr>
<td>B</td>
<td>Bottom center of 1st mat dimension</td>
</tr>
<tr>
<td>C</td>
<td>Bottom right corner of 1st mat dimension, 2 in. from top surface of the right edge to center of cable exit</td>
</tr>
<tr>
<td>D</td>
<td>Bottom right corner of 2nd mat dimension, 2 in. from top surface of the bottom edge to center of cable exit</td>
</tr>
<tr>
<td>E</td>
<td>Center of 2nd mat dimension</td>
</tr>
<tr>
<td>F</td>
<td>Top right corner of 2nd mat dimension, 2 in. from top surface of the top edge to center of cable exit</td>
</tr>
</tbody>
</table>

Notes: Mats with both dimensions equal will only have “A”, “B”, and “C” cable locations available.

Accessories for Standard and Metric Sized Mats

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMRT4</td>
<td>Bulk two-part ramp trim with yellow PVC cover 1.22 m (48 in.) length</td>
<td>1.5 kg (3.3 lb.)</td>
</tr>
<tr>
<td>UMRT8</td>
<td>Bulk two-part ramp trim with yellow PVC cover 2.44 m (96 in.) length</td>
<td>3.0 kg (6.6 lb.)</td>
</tr>
<tr>
<td>UMRT8A</td>
<td>Bulk two-part ramp trim with aluminum top 2.44 m (96 in.) length</td>
<td>3.2 kg (7.0 lb.)</td>
</tr>
<tr>
<td>UMJS4</td>
<td>Bulk two-part active joining trim 1.22 m (48 in.) length</td>
<td>1.4 kg (3.0 lb.)</td>
</tr>
<tr>
<td>UMJS8</td>
<td>Bulk two-part active joining trim 2.44 m (96 in.) length</td>
<td>2.7 kg (6.0 lb.)</td>
</tr>
<tr>
<td>UMJTC8Y</td>
<td>Bulk joining trim cover yellow 2.44 m (96 in.)</td>
<td>0.5 kg (1.0 lb.)</td>
</tr>
<tr>
<td>UMBT4</td>
<td>Bulk blunt trim 1.22 m (48 in.) length</td>
<td>1.1 kg (2.5 lb.)</td>
</tr>
<tr>
<td>UMBT8</td>
<td>Bulk blunt trim 2.44 m (96 in.) length</td>
<td>2.3 kg (5.0 lb.)</td>
</tr>
<tr>
<td>UMAAL</td>
<td>Bulk aluminum ramp trim 2.44 m (96 in.)</td>
<td>2.9 kg (6.5 lb.)</td>
</tr>
<tr>
<td>UMOC</td>
<td>Molded outside corner</td>
<td></td>
</tr>
<tr>
<td>UMIC</td>
<td>Molded inside corner</td>
<td></td>
</tr>
<tr>
<td>UMDB-6</td>
<td>Universal Safety Mat distribution box with 6 mat input connectors and one output connection to the controller</td>
<td></td>
</tr>
<tr>
<td>UMEC-03</td>
<td>3 m (9 ft.) extension cable for mat or UMDB-6</td>
<td></td>
</tr>
<tr>
<td>UMEC-05</td>
<td>5 m (16 ft.) extension cable for mat or UMDB-6</td>
<td></td>
</tr>
<tr>
<td>UMEC-10</td>
<td>10 m (32 ft.) extension cable for mat or UMDB-6</td>
<td></td>
</tr>
<tr>
<td>UMEC-15</td>
<td>15 m (49 ft.) extension cable for mat or UMDB-6</td>
<td></td>
</tr>
<tr>
<td>UMPMC</td>
<td>Panel-mount connector. Allows the controller to accept quick disconnect cable from UM series mats.</td>
<td></td>
</tr>
<tr>
<td>UMAPRC</td>
<td>4-pin male QD field replacement connector for mat cables</td>
<td></td>
</tr>
<tr>
<td>UMY2.1</td>
<td>7” connector, internally connected to allow 2 mats to 1 input to controller or connector</td>
<td></td>
</tr>
<tr>
<td>UMO5</td>
<td>5 m quick-disconnect cable</td>
<td></td>
</tr>
<tr>
<td>UMQ10</td>
<td>10 m quick-disconnect cable</td>
<td></td>
</tr>
</tbody>
</table>

For complete specifications and additional models and accessories visit www.omron247.com
**MC3, MC4 and MC6 Series**

**Safety Mat Controllers**

The MC Series safety mat controllers are used in conjunction with a four-wire, normally open, safety mat where perimeter guarding is required. These control reliable controllers send a stop signal to the guarded machine when an object of sufficient weight is detected on the active mat area.

The MC Series controllers, when combined with a four-wire UM or UMQ series mat, provide access guarding and improved productivity. The work area is fully visible and accessible.


**MC6**

- Universal power input
- Up to 6 mat zone inputs
- Six mat zone status indicator LEDs
- Select from Automatic Start, Start/Restart Interlock or Start Interlock operating modes
- MPCE monitoring
- Remote access to reset functions
- 2-digit numeric display for fault diagnostics
- Surface mount, lockable metal enclosure

**Options**

- Lid-mounted reset key switch

**Description**

**MC3**

The MC3 DIN mount controller may be used in applications that do not require the feature set of the MC6 controller. The MC3 single zone mat controller has removable terminal blocks and operates only on 24 VDC.

**MC4**

The MC4 is a NEMA 4, 12 rated single zone mat controller. This controller may be used in applications when the diagnostic features of the MC6 may not be required. The MC4 may be ordered in either 24 VDC or the universal auto-selecting power supply for 100-240 VAC.

**MC6**

The MC6 is a NEMA 4, 12 controller with six individual mat zone indicators and is designed to be backward compatible with the MC4. Both units are dimensionally identical. This is where the similarities stop: The MC6 has full featured diagnostics with a 24 VDC and an optional universal power supply (100-240 VAC auto-selecting). It is a controller that can be used anywhere in the world.

**Additional Guarding Requirements**

A safety mat system is often only one part of a machine guarding solution. If the safety mat does not protect all access to the point of operation, additional guarding must be used. Safety mat systems should only be used to detect the presence, not the absence, of a force.

**Perimeter Guarding Requirements**

For perimeter guarding installations, the guarded machine or robot controller must be wired such that any stop signal generated by the safety mat system will cause an immediate stop of the hazardous motion. The machine or robot must only be restarted by the actuation of a manual reset switch. This reset switch must be located outside the area of hazardous motion and positioned such that the hazardous area can be observed by the switch operator. The purpose of this arrangement is to prevent a machine or robot from automatically restarting once the sensing weight is no longer detected by the safety mat sensing area.
## Specifications

### Controller Specifications

<table>
<thead>
<tr>
<th>Performance</th>
<th>MC3</th>
<th>MC4</th>
<th>MC6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 3 Safety Device:</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Input Resistance:</td>
<td>8 ohm per input channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Time:</td>
<td>&lt; 30 msec</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Indications:
- 1 - Green = Run
- 1 - Red = Stop
- 1 - Green = Mat Clear

### Operational Modes: (Selectable)
- Automatic Start, Start/Restart Interlock
- DIP Switch Selected, Automatic Start, Start/Restart Interlock

### Electrical

#### Power Input:
- 24 VDC ± 15% < 3 watts
- 24 VDC ± 10% < 3 watts or Autoselecting, 100 - 420 VAC ± 10%, 20 watts
- 24 VDC ± 10% 10 watts (Relay), 24 VDC ± 10% 50 watts (Solid-State), or Autoselecting, 100 - 240 VAC ± 10%, 20 watts

#### Safety Inputs:
- One - 4-wire UM Safety Mat, or group series as one input. Approximately 12 multiple mats may be connected to a single zone in series. Do not exceed 8 ohms per input channel
- Connections for up to six - 4-wire UM Safety Mats
- Approximately 12 multiple mats may be connected to a single zone in series
- Do not exceed 8 ohms per input channel

#### Safety Output Relays:
- 2 NO and 2 NC
- 2 NO and 1 NC

#### Maximum Switched Current:
- 230 VAC, 6 A, 1500 watts 24 VDC - 2 A Inductive, 6 A Resistive
- 230 VAC, 7 A, 1600 watts 24 VDC - 2 A Inductive, 6 A Resistive

#### MPCE:
- n/a

#### Aux. Output Relay:
- None (NC may be used as Aux)
- 1 NO and 1 NC

#### Maximum Switched Current:
- 230 VAC, 6 A, 1500 watts
- 30 VDC, 10 A
- 230 VAC, 6 A, 1500 watts
- 125 VAC, 0.5 A

#### Relay Life:
- Mechanical = 10M operations
- 30 VDC, 1.0 A
- 230 VAC, 6 A, 1500 watts
- 125 VAC, 0.5 A

#### Terminal Blocks:
- Removable Pressure point screw
- Cage clamp terminal strip
- Cage clamp terminal strip & 2-part terminal blocks

### Options

#### Solid-State Outputs

#### Solid-State Safety Outputs:
- n/a

#### Maximum Switched Current:
- 2 Current Sourcing 24 VDC (PNP)
- 0.625 A @ 24 VDC

#### Solid-State Aux. Outputs:
- n/a

#### Maximum Switched Current:
- Current Sourcing Max: 0.5 A @ 24 VDC
- Current Sinking Max: 0.1 A @ 24 VDC

#### Reset Function

#### Key-switch (factory installed):
- n/a

#### Remote:
- user supplied, Key-switch, or Pushbutton

#### Mat Input Connectors:
- n/a

#### Power Input and Safety Output Connector:
- n/a

#### Enclosure:
- Polycarbonate
- Polyurethane-painted 14 ga. steel

#### Mounting:
- 35 mm DIN rail
- Surface Mount

### Environmental

#### Protection Rating:
- IP20
- IP65/NEMA 4, 12

#### Operating Temperature:
- 0 to 55°C (32 to 131°F)
- 0 to 55°C (32 to 131°F)

#### Relative Humidity:
- 90%

#### Vibration:
- 5-60 Hz at 5 g max on three axis
- 10-55 Hz at 5 g max on three axis

#### Shock:
- 10 g for 0.016 sec., 1000 shocks for each axis on 3 axis

#### Electromagnetic Compatibility (EMC)

#### Electrostatic Discharge (ESD):
- ±8 kV (air discharge), ±16 kV (contact discharge)

#### Radiated RF Field:
- 10 V/m, 80 to 1000 MHz

#### Electrical Fast Transients (EFT):
- ±2 kV (all power and I/O ports)
- ±2 kV (all power and I/O ports)

#### Surge:
- ±2 kV (all power and I/O ports)

#### Shipping WL:
- 0.22 kg (0.8 lbs.)
- Approx 4 kg (9.0 lbs.)

#### Standards of Conformity:

#### Designed to Meet or Exceed:

Specifications are subject to change without notice.
Dimensions (continued) (mm/in.)

**MC3**

- Side View:
  - 15.3 \(0.6\)
  - 98 \(3.9\)
  - 35.5 \(1.4\)
  - 61.2 \(2.4\)
  - 55 \(2.2\)
  - 7.5 \(0.3\)
  - 1.5 \(0.6\)

- Bottom View:
  - 1.5 \(0.6\)

**UMDB-6**

- UMDB-6 View:
  - 101.6 \(4.00\)
  - 217.4 \(8.56\)
  - 38.1 \(1.50\)
  - 38.1 \(1.50\)
  - 78.2 \(3.08\)
  - 75.7 \(3.00\)
  - 38.1 \(1.50\)
  - 50.8 \(2.00\)

For complete specifications and additional models and accessories visit www.omron247.com
MULTIPLE MATS MAY BE CONNECTED TO THE CONTROLLER USING THIS METHOD. THE ABOVE EXAMPLE SHOWS 4 MATS WIRED. MATS MUST BE CONNECTED IN SEQUENCE, USING ZONE 1, ZONE 2, ZONE 3, etc. DIP SWITCHES MUST BE SET TO THE NUMBER OF ZONES BEING USED.

Mat Connections for Listed Controllers

- The MC4 and MC6 controllers may be ordered with up to 6 mat connectors (part #60477) installed.
- When using the MC3 controller, part #60477 may be ordered for mounting in customer enclosure.

UMDB-6

Female Terminal Installs Inside Male Terminal

For complete specifications and additional models and accessories visit www.omron247.com
Wiring (continued)

MC6 AC Power, 12-Pin Connector

![Diagram of MC6 AC Power, 12-Pin Connector]

MC6 DC Power, 12-Pin Connector

![Diagram of MC6 DC Power, 12-Pin Connector]
Suggested Machine and PLC Connections

MC3, Two Normally Open Safety Relay Outputs

24VDC POWER TO CONTROLLER

OPTIONAL KEY SWITCH OR PUSH BUTTON RESET

M11 (BLK) M12 (BRN) M21 (BLU) M22 (WHT)

MAT 1 (WHT) (BRN) MAT 2 (WHT) (BRN) MAT 3 (WHT)

Y2 Y1 X1 X2 M11 M12 M21 M22

STOP RUN BLK BRN BLU WHT MAT

MAT CLEAR

24VDC 2.2 VA START

OUTPUTS 250 VAC 6 A 1500 VA MAX

MACHINE MOTOR VOLTAGE

CUSTOMER SUPPLIED FUSE 5 AMPS OR LESS

FUSE

TO PLC FOR MONITORING

NC NC NC

FOR COMPLETE SPECIFICATIONS AND ADDITIONAL MODELS AND ACCESSORIES VISIT WWW.OMRON247.COM

For complete specifications and additional models and accessories visit www.omron247.com

OMRON
AUTOMATION & SAFETY

E-19
MC Controllers  Safety Mats & Edges

Suggested Machine and PLC Connections (continued)

MC4, Two Normally Open Safety Relay Outputs, 100 to 240 VAC Power

100 TO 240 VAC POWER TO CONTROLLER

MACHINE MOTOR VOLTAGE

CUSTOMER SUPPLIED FUSE 7 AMPS OR LESS

OPTIONAL KEY SWITCH OR PUSH BUTTON RESET

CONNECTS TO TERMINAL INSIDE ENCLOSURE

TERMINAL CONNECTIONS FOR SAFETY MATS

TERMINAL CONNECTIONS FOR SAFETY MATS

UP TO 6 MATS MAY BE CONNECTED TO THE CONTROLLER USING THIS METHOD. AS EACH MAT IS CONNECTED, THE JUMPER IS MOVED TO THE LAST UNUSED TERMINAL. THE ABOVE EXAMPLE SHOWS TWO MATS WIRED. JUMPERS WOULD BE PLACED AS SHOWN. (3 BLK) IS JUMPERED TO TERMINAL LABELED 6 BLU & (3 BRN) IS JUMPERED TO TERMINAL LABELED 6 WHT. WHEN ALL 6 MATS ARE CONNECTED, JUMPERS ARE NOT REQUIRED.
Suggested Machine and PLC Connections (continued)

MC4, Two Normally Open Safety Relay Outputs, 24 VDC Power

For complete specifications and additional models and accessories visit www.omron247.com
Suggested Machine and PLC Connections (continued)

MC6, Two Solid-State Safety Outputs, 24 VDC Power

---

**TERMINAL CONNECTIONS FOR SAFETY MATS**

**TB1**
- ZONE 1: 1, 2, 3, 4, 5, 6
- ZONE 2: 7, 8, 9, 10, 11, 12
- ZONE 3: 13, 14, 15, 16, 17, 18
- ZONE 4: 19, 20, 21, 22, 23, 24
- ZONE 5: 25, 26, 27, 28, 29, 30
- ZONE 6: 31, 32, 33, 34, 35, 36

**TB2**
- ZONE 7: 37, 38, 39, 40, 41, 42
- ZONE 8: 43, 44, 45, 46, 47, 48
- ZONE 9: 49, 50, 51, 52, 53, 54
- ZONE 10: 55, 56, 57, 58, 59, 60
- ZONE 11: 61, 62, 63, 64, 65, 66

**TB3**
- ZONE 1: 1, 2, 3, 4, 5, 6
- ZONE 2: 7, 8, 9, 10, 11, 12
- ZONE 3: 13, 14, 15, 16, 17, 18
- ZONE 4: 19, 20, 21, 22, 23, 24
- ZONE 5: 25, 26, 27, 28, 29, 30
- ZONE 6: 31, 32, 33, 34, 35, 36

**TB4**
- ZONE 1: 1, 2, 3, 4, 5, 6
- ZONE 2: 7, 8, 9, 10, 11, 12
- ZONE 3: 13, 14, 15, 16, 17, 18
- ZONE 4: 19, 20, 21, 22, 23, 24
- ZONE 5: 25, 26, 27, 28, 29, 30
- ZONE 6: 31, 32, 33, 34, 35, 36

**FACTORY INSTALLED JUMPER**
- REMOVE WHEN MPCE IS USED

**SOLID STATE OUTPUT BOARD**

**MC6**
- 12345
- 6BRN
- 6WHT
- 6BLU
- 6BLK
- 5BRN
- 5BLU
- 5BLK
- 4BRN
- 5WHT
- 4BLU
- 4BLK
- 3BRN
- 3WHT
- 3BLU
- ZONE 1
- 1BRN
- 1WHT
- 1BLU
- 1BLK
- ZONE 2
- 2BRN
- 2WHT
- 2BLU
- 2BLK
- ZONE 3
- 3BRN
- 3WHT
- 3BLU
- ZONE 6
- 6BRN
- 6WHT
- 6BLU
- 6BLK

**MPCE1, CR**
- TO MACHINE CONTROL

**MPCE2**
- AUX INPUTS TO PLC

**TRANSIENT VOLTAGE SUPPRESSORS**
- TVS are optional

**MC Controllers**
- Safety Mats & Edges

---

*For complete specifications and additional models and accessories visit www.omron247.com*
### Ordering

**MC-3**

**MC3 Series Safety Mat Controller**

- No options are available

**MC-4**

<table>
<thead>
<tr>
<th>Power Input Connector</th>
<th>0</th>
<th>No power input &amp; safety output connector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Power input &amp; safety output connector</td>
</tr>
</tbody>
</table>

| Lid Mounted Key-switch | 0 | No key-switch                           |
|                       | 1 | Factory installed lid mounted key-switch |

**MC-6**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>AC</th>
<th>AC power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC</td>
<td>DC power</td>
</tr>
</tbody>
</table>

| Power Input Connector | 0 | No power input & safety output connector |
|                       | 1 | Power input & safety output connector   |

| Lid Mounted Reset Key-switch | 0 | No reset keyswitch                       |
|                              | 1 | Factory installed lid mounted reset keyswitch |

**Safety Output Module**

- 1 Safety relay
- 2 Solid-state (not available with AC input)

<table>
<thead>
<tr>
<th>Mat Input Connectors</th>
<th>0</th>
<th>No mat connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Please specify a number between 1 &amp; 6</td>
</tr>
</tbody>
</table>

### Safety Standards and Precautions

A Safety Mat controller is a general purpose, safety mat control device and is not designed for any specific type, model or brand of machine. All safety-related functions of the guarded machine controls including pneumatic, electric, logic or hydraulic controls must be control reliable.

A Safety Mat controller when combined with a four-wire safety mat meets ANSI/RIA R15.06-1999 (R2009), ANSI B11.19-2010 and the following applicable OSHA standards. When used with mechanical power presses, OSHA standard 1910.217(c) applies. For other applications the requirements of section 1910.212 apply.

Only use a Safety Mat controller and four-wire safety mat system on machinery that stops consistently and immediately anywhere in its cycle or stroke. Never use a Safety Mat controller and four-wire safety mat system on a full-revolution clutched press or machine. Access to the point of operation or hazardous machine area not protected by the Safety Mat controller and four-wire safety mat system must be guarded by fencing, barriers or other appropriate methods.

The purchaser, installer and employer are responsible for meeting all local state and federal government laws, rules, codes or regulations relating to the proper use, installation, operation and maintenance of this control and the guarded machine. See Installation and Operation Manual for details.

All application examples described are for illustration purposes only. Actual installations may differ from those indicated.
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

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-isolating 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

<table>
<thead>
<tr>
<th>Safety Edges</th>
<th>Safety Mats &amp; Edges</th>
</tr>
</thead>
</table>

**Features**

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

**Chemical Resistance**

<table>
<thead>
<tr>
<th></th>
<th>TPE*</th>
<th>EPDM**</th>
<th>NBR***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Resistance</td>
<td>1</td>
<td>1-2</td>
<td>1</td>
</tr>
<tr>
<td>Diluted Acids</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Diluted Bases</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Non-Oxidizing Acids</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Oxidizing Acids</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>ASTM Oil #3</td>
<td>2</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Vegetable Oils</td>
<td>1-2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Organic Solvents</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ester Solvents</td>
<td>2-3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Ketone Solvents (Containing Oxygen)</td>
<td>2-3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Aliphatic Hydrocarbons (Gasoline)</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Aromatic Hydrocarbons</td>
<td>6</td>
<td>2-3</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Hydrocarbons</td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>2-3</td>
<td>5-6</td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Key:**

1 = very good
6 = insufficient

*TPE: Thermoplastic Elastomer
Models include: SGE-88, SGE-1510, SGE-125, SGE-225

**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
## Force Distance

### SGE-125:
For Test Speed $v=10$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>27.3</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>1.8</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>8.3</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>10.6</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>11.5</td>
</tr>
</tbody>
</table>

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

### SGE-125:
For Test Speed $v=100$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>33</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>1.9</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>10.1</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>11.1</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>12.2</td>
</tr>
</tbody>
</table>

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

### SGE-225:
For Test Speed $v=10$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>56.7</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>3.9</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>2.3</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>6.7</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>12.0</td>
</tr>
</tbody>
</table>

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

### SGE-225:
For Test Speed $v=100$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>62.7</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>4.4</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>2.7</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>7.2</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>12.0</td>
</tr>
</tbody>
</table>

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

### SGE-245:
For Test Speed $v=10$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>67.7</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>7.4</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>15.8</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>18.3</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>21.7</td>
</tr>
</tbody>
</table>

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

### SGE-245:
For Test Speed $v=100$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>82.7</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>7.8</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>15.2</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>17.7</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>21.9</td>
</tr>
</tbody>
</table>

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

### SGE-365:
For Test Speed $v=10$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>78.2</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>5.16</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>29.82</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>33.78</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>36.51</td>
</tr>
</tbody>
</table>

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

### SGE-365:
For Test Speed $v=100$ mm/s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>$+20, ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Actuating Force Fa (N)</td>
<td>107.7</td>
</tr>
<tr>
<td>Actuating Distance Sb (mm)</td>
<td>6.23</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 250N in MM</td>
<td>28.37</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 400N in MM</td>
<td>32.76</td>
</tr>
<tr>
<td>Overtravel Distance Sv @ 600N in MM</td>
<td>35.34</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Type</th>
<th>Bending Angle</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGE-88</td>
<td>45°</td>
<td>30°</td>
<td>30°</td>
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<tr>
<td>SGE-125</td>
<td>45°</td>
<td>20°</td>
<td>20°</td>
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<tr>
<td>SGE-1510</td>
<td>45°</td>
<td>20°</td>
<td>15°</td>
<td></td>
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<tr>
<td>SGE-225</td>
<td>45°</td>
<td>20°</td>
<td>30°</td>
<td></td>
</tr>
<tr>
<td>SGE-245</td>
<td>45°</td>
<td>10°</td>
<td>20°</td>
<td></td>
</tr>
<tr>
<td>SGE-245L</td>
<td>45°</td>
<td>10°</td>
<td>20°</td>
<td></td>
</tr>
<tr>
<td>SGE-365</td>
<td>45°</td>
<td>10°</td>
<td>15°</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Bending the safety edges, the profiles with sealing lip becomes compressed and corrugated.
2. Bending angle and radii are not part of the tests complying with EN1760-2 and EN12978.
For complete specifications and additional models and accessories visit www.omron247.com
Typical Installation

APPLICATION OF 3 EDGES TO FORM 1 SYSTEM

"5" CONFIGURATION

2 Wire Lead / 2 Wire Lead with Female QD

SGE365-5-0500 02000C-05000F
Safety Edge 365 Profile, 500 mm long
with two cables, one 2000 mm cable and one with 5000 mm and Female QD cable

"3" CONFIGURATION

2 Wire Lead with Male QD / 2 Wire Lead with Female QD

SGE365-3-0500 05000M-02000F
Safety Edge 365 Profile, 500 mm long
with two cables, one with 5000 mm and Male QD and one 2000 mm Female QD

"4" CONFIGURATION

2 Wire Lead with Male QD / Internal Resistor

SGE365-4-1000 05000M
Safety Edge 365 Profile, 1000 mm long
with one cable, with 5000 mm and Male QD and Internal Resistor

APPLICATION OF 2 EDGES TO FORM 1 SYSTEM WITH EXTERNAL RESISTOR

"0" CONFIGURATION

2 Wire Lead / 2 Wire Lead

SCS2540-0-0300 02000C-02000C
Safety Edge 2540 Profile, 300 mm long
with two cables each 2000 mm

"1" CONFIGURATION

2 Wire Lead / 2 Wire Lead with Resistor

SCS2540-1-0300 02000C
Safety Edge 2540 Profile, 300 mm long
with one cable 2000 mm
and one cable 200 mm w/resistor

Wiring

Available Configurations

2 Wire Lead / 2 Wire Lead

"0" CONFIGURATION

2 Wire Lead / Internal Resistor

"2" CONFIGURATION

2 Wire Lead with Male QD / 2 Wire Lead with Female QD

"3" CONFIGURATION

2 Wire Lead with Male QD / Internal Resistor

"4" CONFIGURATION

2 Wire Lead / 2 Wire Lead with Female QD

"5" CONFIGURATION

For complete specifications and additional models and accessories visit www.omron247.com
### SGE Series

**Safety Edge Configuration**
- **88**: 8 mm x 8 mm
- **1510**: 15 mm x 10 mm
- **125**: 15 mm x 25 mm
- **225**: 25 mm x 25 mm
- **245**: 25 mm x 45 mm
- **245L**: 25 mm x 45 mm, with Sealing Lip
- **365**: 35 mm x 65 mm, black
- **Y365**: 35 mm x 65 mm, yellow

**Wiring Configuration**
- **0**: Two 2-wire connections
- **2**: One 2-wire connection and one internal resistor connection
- **3**: One quick-disconnect male and one quick-disconnect female connector
- **4**: One quick-disconnect male and one internal resistor connection
- **5**: One quick-disconnect female and 2-wire connection

**Length**
Specify length in increments of 10 mm, from 150 mm up to 6100 mm, use 4-digits.

**Mounting**
- (blank): Standard Mounting (all except 1510)
- **L**: Angle aluminum mounting channel (all except 1510 and 125)
- **L**: Rubber lip mounting for ONLY SGE-1510
- **A**: Aluminum mounting for ONLY SGE 1510
- **N**: No mounting channel supplied

**First Cable Length**
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.

**Second Cable Length**
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 Series**

**Safety Edge Configuration**
- **2525**: 25 mm x 25 mm (Available in NBR only)
- **2540**: 25 mm x 40 mm (Available in NBR only)

**Wiring Configuration**
- **0**: Two 2-wire connections
- **1**: One 2-wire connection and one external resistor connection
- **2**: One 2-wire connection and one internal resistor connection
- **3**: One quick-disconnect male and one quick-disconnect female connector
- **4**: One quick-disconnect male and one internal resistor connection
- **5**: One quick-disconnect female and 2-wire connection

**Length**
Specify length in increments of 10 mm up to 6100 mm, use 4-digits.

**Mounting**
- (blank): Standard Mounting
- **L**: Angle aluminum mounting channel
- **N**: No mounting channel supplied

**First Cable Length**
Specify length in mm from 100 to 10,000 using 5 digits.

**Second Cable Length**
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 SGEY365 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

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For complete specifications and additional models and accessories visit www.omron247.com
Safety Mats & Edges

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
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

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 3 Safety Device:</td>
<td>Yes</td>
</tr>
<tr>
<td>Operating Area:</td>
<td>Up to 5 sensing devices with a total cable length of max. 25 m in series</td>
</tr>
<tr>
<td>Response Time:</td>
<td>&lt; 13 msec</td>
</tr>
<tr>
<td>Indications:</td>
<td>Power – Main power supply = Green</td>
</tr>
<tr>
<td></td>
<td>Actuate – Edge is depressed = Yellow</td>
</tr>
<tr>
<td></td>
<td>Fault – Detect an irregular signal = Red</td>
</tr>
<tr>
<td></td>
<td>Aux. Actuate – Activate Aux. output = Orange</td>
</tr>
<tr>
<td>Operational Modes (Selectable):</td>
<td>Automatic Start, Start/Restart Interlock</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
</tr>
<tr>
<td>Power Input:</td>
<td>115 VAC, 50/60 Hz, 3 VA or 24 VAC/DC ± 10%, 1.5 W</td>
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<tr>
<td>Safety Output:</td>
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<td>Maximum Switched Current:</td>
<td>4 A, 250 VAC / 4 A, 30 VDC</td>
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<tr>
<td>Auxiliary Relay Output:</td>
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<td></td>
</tr>
<tr>
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<td>35 mm DIN rail</td>
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<tr>
<td>Protection Rating:</td>
<td>IP20</td>
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<td>Operating Temperature:</td>
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<tr>
<td>Shipping Weight:</td>
<td>210 g (7.4 oz.)</td>
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<td>Standards Conformity:</td>
<td>CE, TUV</td>
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<tr>
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## Mechanical

| Enclosure: | Polyamide PA6.6, Self-extinguishing in accordance with UL-94-V2 |
| Mounting: | 35 mm DIN rail |

## Environmental

| 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 |

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