

OMRON

STI SAFETY, TECHNOLOGY & INNOVATION

Model **UMA-**□-□-□
UMMA-□-□-□
UMYA-□-□-□
UMMYA-□-□-□

Safety Mat

EN Safety Precautions

Thank you for purchasing the UMA Series Safety Mat. Be sure to have the safety mat handled by a "Responsible Person" who is well aware of and familiar with the machine to be installed. The term "Responsible Person" used in this document means the person qualified, authorized and responsible to secure "safety" in each process of the design, installation, operation, maintenance services and disposition of the machine. It is assumed that UMA safety mat will be used properly according to the installation environment, performance and function of the machine. Responsible Person should conduct risk assessment on the machine and determine the suitability of this product before installation. Read this document and reference manuals for safety mat thoroughly to understand and make good use of the descriptions before installing and operating the product. Keep this document at the place where the operator can refer to whenever necessary.

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 Original instructions

Instructions in the official EU languages and a signed EU Declaration of Conformity in English are available on our website at www.industrial.omron.eu/safety.

EU Declaration of Conformity

OMRON declares that the UMA Series Safety Mat is in conformity with the requirements of the following EU Directive(s):
 Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU

Legislation and Standards

- When used with MC3 Safety Mat Controller or SCC-1224A Safety Mat/Edge Controller, the UMA Series Safety Mats comprise a system of Category 3 according to EN ISO 13849-1 which has been EC type examined to the requirements of EN ISO 13856-1.
- (1) This product is a pressure-sensitive protective device in accordance with EN ISO 13856-1.
 (2) This product complies with the following legislation and standards:
 - EU Legislation: Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EC
 - European & International Standards: EN ISO 13856-1:2013, EN 12978:2003+A1:2009, EN ISO 13849-1:2015
 - North American Standards: ANSI/RIA 15.06-2012, ANSI B11.19-2010, ANSI/UL 508, OSHA 1910.21(b), CSA Z432-04, CSA-C22.2 No. 14

Safety Precautions

This document uses of symbols and alerts to identify the level of risk associated with certain uses or misuses of the product. Failure to follow all precautions and alerts may result in an unsafe use or operation. Thoroughly read this document and understand all installation procedures, operation check procedures and maintenance procedures before using the safety mat system.

● Meanings of Signal Words

WARNING Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.

WARNING

Serious injury may occur due to loss of required safety functions. DO NOT install the safety mat so that its operation may turn on the guarded equipment in a hazardous state. Only install the safety mat so that its operation turns the guarded equipment off in a hazardous state.

Serious injury may occur due to loss of required safety functions. DO NOT use a safety mat to detect children as it does not support child detection.

The operator has to be heavier than 35 kg (77 lb) in order for the safety mat to sense the person. Otherwise the safety mat may not activate and seriously injury can occur.

Do not use, on the safety mat, high heels or walking aids such as walking sticks or walking frames of which the contact surface with the safety mat has a diameter less than 80 mm. Otherwise the safety mat may not activate and seriously injury can occur.

Make sure to install the safety mat at the safe distance from the hazardous part of the equipment. Otherwise, the machine may not stop before a person reaches the hazardous part, resulting in serious injury.

DO NOT use the safety mat for machines that cannot be stopped by electrical control. For example, DO NOT use it for a pressing machine that uses full-rotation clutch. Otherwise, the machine may not stop before a person reaches the hazardous part, resulting in serious injury.

Ensure that no dead zone exists. An operator entering a dead zone where the operating machine remains active may result in serious injury.

Stacking safety mats after removal from packaging may affect the functionality of the mats. The UMA Safety Mat is durable activating device, providing it is properly handled and installed. For dependable and long life of the safety mat, follow instructions in User Manual carefully.

DO NOT store the safety mat where it may fall. The product may get damaged or someone will get hurt as it falls.

Employees must be instructed that the perimeter trim and molded corners are not an active sensing surface. Stepping only on the perimeter trim and molded corners will not send a stop signal to the guarded machine.

Mount mat trims properly for protection and for proper mat operation.

If the safety mat is large, DO NOT carry it horizontally or allow it to be handled by one person. The safety mat may be bent or get damaged. The handler may be injured.

DO NOT cover a safety mat. Otherwise, the safety mat may not be activated, resulting in serious injury.

Serious injury may occur due to loss of required safety functions. DO NOT drill through or make a hole in the safety mat. Doing so may corrode the inside of the safety mat, which may cause a person to go undetected.

DO NOT install the safety mat where the area is submerged in water. Water may enter the mat and prevent it from working properly.

DO NOT use the safety mat where flammable gases or explosive gases may be present. Doing so may cause combustion or explosion due to relay heating or arcing during switching.

DO NOT use the safety mat where the surrounding area has hot burning metal such as welding sparks or it will be exposed to chemicals to which mat material is not resistant. The safety mat may get damaged, which may cause a person to go undetected.

Serious injury may occur due to loss of required safety functions. DO NOT install the safety mat upside down. Doing so may cause a person to go undetected. Install the safety mat so that the surface with cones comes upside.

DO NOT drop or disassemble the safety mat. Doing so may damage the product or cause fire or electric shock, resulting in seriously injury.

Serious injury may occur due to breakdown of the safety outputs. DO NOT connect loads beyond rated value to the safety outputs.

Serious injury may occur due to breakdown of the safety outputs. Wire the safety mat properly so that supply voltages or voltages for loads DO NOT touch the safety outputs accidentally or intentionally.

Serious injury may occur due to loss of required safety functions. Operate this presence sensing safetypressure-sensitive protective device only when it is properly installed, tested and inspected in accordance with all applicable government, industry and company safety regulations.

Precautions for Safe Use

- Turn OFF the power supply before wiring. Also, do not touch any terminals (current-carrying parts) while the power is ON. Doing so may result in electric shock.
- If a connector is not properly connected to extension cable or to another product, water may enter the connector and prevent it from working properly.
- Install the safety mat on a flat surface, otherwise the mat may not work as intended.
- Do not perform wiring when there is a risk of lightning. Doing so may result in electric shock.
- Apply properly specified voltages to the safety mat inputs. Applying inappropriate voltages may cause the safety mat to fail to perform its specified function, which leads to the loss of safety functions or damages to the safety mat.
- Use a power supply of the specified voltage. Do not use power supplies with large ripples or power supplies that intermittently generate incorrect voltages.
- Do not use the safety mat for a load that exceeds the safety mat's switching capacity (contact voltage, contact current) or other contact ratings. Doing so will reduce the specified performance, causing insulation failure, contact welding, and contact failure, and the safety mat may be damaged.
- The durability of the safety mat depends greatly on the switching conditions. Confirm operation under the actual conditions in which the safety mat will be used. Make sure the number of switching operations is within the permissible range. If a safety mat is used after performance has deteriorated, it may result in insulation failure between circuits and burning of the safety mat itself.

- To prevent short-circuit or ground failure of the load, connect fuses as protection elements. Not doing so may damage or burn the load.
- When installing trims, be careful not to get injured by potential sharp edges.
- Incorrect connection to the controller will prevent the safety mat system from working properly.
- Exceeding the maximum number of mats, the maximum mat surface area or the maximum total cable length for mat connection will prevent the mat from working properly.
- Do not allow wheeled vehicle such as forklifts to be starting, braking, and turning while on the safety mat. Doing so may cause damage to the surface of the mat and cause to loose traction.

Precautions for Correct Use

Use the UMA Series Safety Mat in combination with the MC3 Safety Mat Controller or SCC-1224A Safety Mat/Edge Controller.

- Handle with care
 - Do not drop the safety mat to the ground or expose to excessive vibration or mechanical shock. The safety mat may be damaged and may not function properly.
 - Do not apply constant loads to the same area of the safety mat for a long period of time. It may damage the safety mat.
 - Do not use the safety mat submerged in water or in locations subject to high pressure water jets or continual submersion.
 - Store the safety mat in a vertical (standing) position prior to installation so that loads are not applied to the safety mat.
 - Bending radii of cables must be equal to or higher than specified minimum values.

■ Solvents
 Exposure of the safety mat to solvents such as alcohol, thinner, trichloroethane, organic solvents, hydrochloric acid or gasoline should be avoided. Such solvents can make markings on the safety mat illegible and cause deterioration of parts. Refer to User Manual for further information.

- Storage and use conditions of the Safety Mat
 Do not store and install in the conditions stated below.
 - In direct sunlight
 - At ambient temperatures out of the range of -10 to 55°C (14 to 131°F).
 - At air pressure out of the range of 86 to 106 kPa
 - In corrosive or combustible gases
 - With excessive vibration or mechanical shocks out of the rated values
 - Under splashing of oil, chemicals

- Mounting of the Safety Mat
 - Use dedicated trims to secure the perimeter of the safety mat for installation.
 - Only install the safety mat on a smooth, flat surface free of debris, protrusions and holes. This could result in damage or unspecified operation of the mat.
 - Do not use the cables to lift or move the safety mat.

■ Disposal
 Dispose of the safety mat in accordance with the relevant rules and regulations of the country or area where the safety mat is used.

■ Others
 This is a Class A product (Product in industrial setting). Use of the product outside of an industrial setting may cause radio disturbance. In such case, take appropriate measures.

Installation Procedure

■ Surface Preparation
 The surface on which the safety mat(s) will be placed should be flat, smooth and free of debris. Any debris left under the mat may, in time, work its way through the polyurethane housing and eventually contact the electrode assembly. This may affect the mechanical switching of the electrode assembly and will provide a path for moisture to enter the mat. These conditions may lead to a mat failure.

■ Lifting and Carrying the UMA Safety Mat
 Tilt the mat to a vertical position on the side without the mat cable(s). Hold the vertical edge of the mat while lifting and carrying the mat. Carrying the mat in a vertical position will prevent the mat from bending across its width or length, which could damage the mat by causing a bend or kink in the electrode assembly. A small bow along the length of the mat may be allowed. Assistance may be required to lift, carry and install the larger safety mats. The weight of these mats varies from 2.5 kg (5.5 lb) to over 60 kg (132 lb). The large size and flexibility of these mats can be awkward for one person to carry.

■ Mounting Information
 The mounting surface has to be absolutely even, clean and dry. Position the mat correctly. Mats may not be folded or bent. Safety mats may not be modified in any way. Cutouts or shortening are not possible. Please note that mat trim is required to fix the mat to the floor. The total space required for a mat must include both the mat and the selected trim.

■ Care of the UMA Safety Mat Cables
 After the mat is in place, use care in routing the mat cables to prevent damage to the insulation or damage to the internal wires. Make sure that the cable wireways are free of burrs and sharp edges. If cables are to exit the trim, make sure that all notches or cutouts are large enough to allow the wiring to exit the trim without causing damage to the cables. Bending radii of cables must be equal to or higher than the following minimum values:
 - Mat cables (2-cable mats) and UMA-CBL-4P□□-M8-□M: R34 mm
 - Mat cables (1-cable mats) and UMA-CBL-4P□□-M8-□M: R50 mm

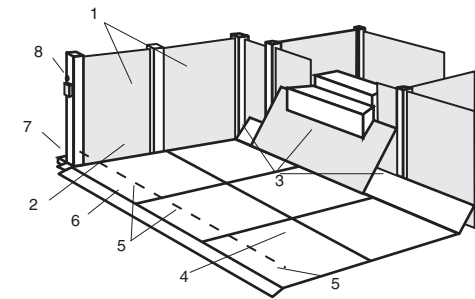
■ Securing the UMA Safety Mat to the Floor
 A safety mat must be fixed in position to prevent its removal or relocation. A relocated mat may not be in position to detect the operator, or other personnel, before they reach the hazard. A safety mat must not, of itself, create a hazard. Use appropriate trim to prevent tripping.

- Arrange the mat(s), cables, and trim system into the desired position. Check that all gaps are closed and all components of the sensing area are snug and properly oriented.
- User should drill mounting holes in aluminum base plate. User determines hole locations. Recommended spacing should be approximately 610 mm between holes and 130 mm from each end of the trim.

- Utilize the drilled holes in perimeter trim as a template to mark drill points on the mounting surface/floor. Never drill through the safety mat! Any holes in the mat will destroy the seal, impair the reliable operation of the mat and void the warranty.
- After marking drill points, remove perimeter trim and drill holes into mounting surface (use a 3/16 inch or 5 mm bit). Check hole alignment of the trim and floor, and then insert the supplied plastic anchors into the mounting holes.
- Position the mats, install the joining trim base between the mats and place the PVC cover on the joining trim base. Square the mats. For two-part trims, slide the trim base under the mats. When the mats and trim are correctly positioned and the holes are aligned, fasten the perimeter trim to the floor using the supplied Phillips head screws.
- After the mats and trim are securely anchored to the floor and the wires have been routed, a rugged cover of the trim is snapped into place. Corners can either be mitered or be our exclusive molded corners. When you using Corners, check hole alignment and fasten the Corners to the floor.

■ Installation Example

- Additional fixed guards are installed to prevent access to the danger zone of the machinery.
- The fixed guard is arranged and designed in such a way that there is no access to the danger zone between the fixed guard and the safety mats. The fixed guard permits access to the danger zone through the sensors only.
- A sloping cover plate prevents the operator standing at the side of the effective sensing field and in the danger zone.
- Safety mats are properly installed.
- The dead zones of the safety mats are located in such a way that the protective function will not be impaired.
- The tripping hazard at the sensor edge is reduced by a ramp at the point of access. The ramp may also protect connecting cables.
- Cable wireway is located outside the fixed guard. This prevents its misuse as an access to the hazard zone.
- Reset button is located in a well protected location giving full visibility of the protected area.



Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

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