



Conforms to EN1088, EN292, EN60204-1  
UL and C-UL listed (pending on MA-34, 35, 36)



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safety interlock switches

## MA-S Series

### Stainless Steel Magnetically Actuated Safety Interlock Switches and Actuators

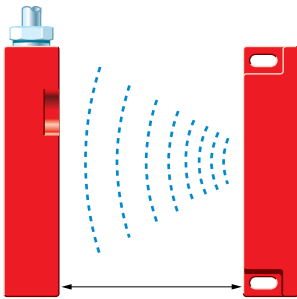
- Stainless steel cases—both switch and actuator are housed in stainless steel for applications that require the use of this robust and corrosion resistant material
- Large selection—choose from a variety of contact configurations housed in stainless steel to satisfy the most demanding applications
- NEMA 6 enclosure enables the MA-S Series switches to satisfy most application requirements
- Misalignment tolerant—the non-contact actuation of the MA-S Series switches makes them very tolerant to misalignment of up to 10 mm (0.39 in.)
- High temperature—the MA-S switches and cables are designed to operate in temperatures up to 125°C (257°F)
- Long life—the MA-S Series safety interlock switches are designed for a minimum of one million actuations

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

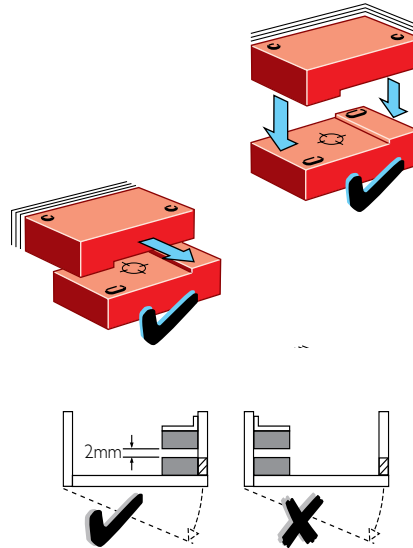
■ Operation

Operating Principle

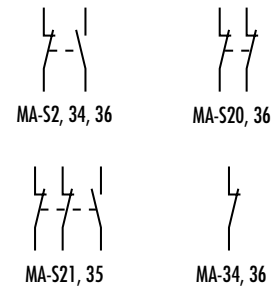


Encapsulated in the MA Series is a unique high-power industrial reed which is de-rated by a non-resettable overload protection circuit depending on switch type. On presenting the actuator to the switch, the high intensity magnetic field from the actuator causes the contacts to close. On removing the actuator (opening the door), the safety contacts open, isolating the machine.

Mounting Examples

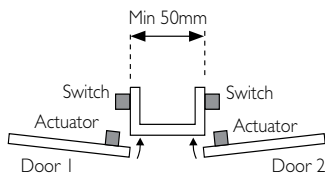


Contact Arrangements

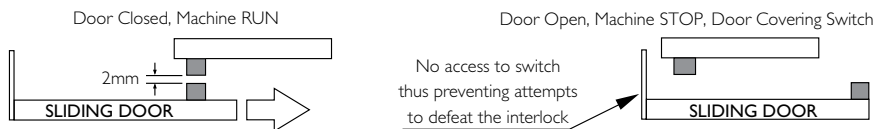


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safety interlock switches



It is advisable, where possible, to mount the switch and actuator on non-ferrous materials otherwise it may affect the operating distances.

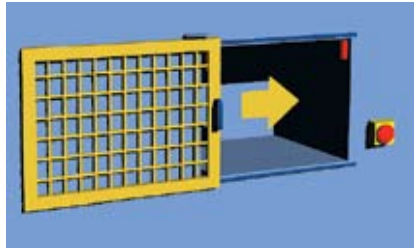


Wherever possible the units should be mounted so that no access can be obtained to the switch when the guard door is open, thus preventing attempts to defeat the safety system.

 Universal Mounting Brackets can be used with this product. See page G241 for details.

## Applications

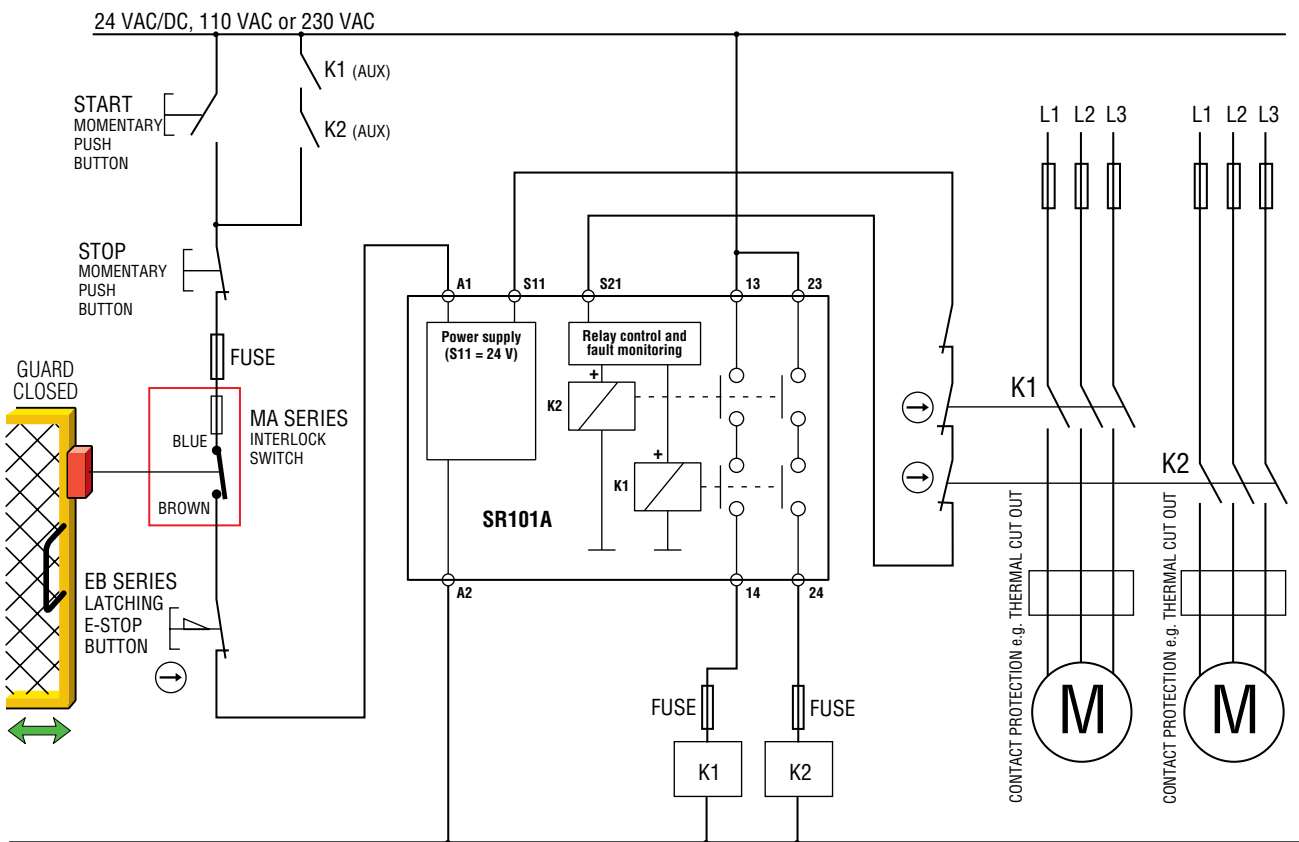
Typical applications are on sliding guard doors or swinging guard doors.



## Typical Application of MA Series with a Safety Monitoring Relay

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safety interlock switches



 For a full explanation of the circuit operating principle and fault detection, see "Common Circuit Examples" in the Engineering Section of this catalog.

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**N** **For More Guarding Products**  
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## ■ Specifications

| Electrical                                | All Models Unless Indicated                                     |  |                             |
|---|---|--|-----------------------------|
| <b>Safety Contacts:</b>                   | AC models   | MA-S2, 36 — 1 N/C  | MA-S20, S21 — 2 N/C         |
|   | DC models   | MA-S2, 34, 36 — 1 N/C  | MA-S20, S21, 35, 36 — 2 N/C |
| <b>Safety Contact Operating Distance:</b> | Make 7-12 mm (0.28-0.47 in.); Break 12-25 mm (0.47 to 0.98 in.) |  |                             |
| <b>Auxiliary Contacts:</b>                | MA-S2, S21, 34, 35, 36  | 1 N/O  |                             |
| <b>Aux. Contact Operating Distance:</b>   | MA-S2, S21, 34, 35, S36   | Make 10-13 mm (0.39-0.51 in.); Break 8-10 mm (0.31-0.39 in.) |                             |
| <b>Safety Rated Voltage:</b>              | AC models   | 230 VAC  |                             |
|   | DC models   | 30 VDC   |                             |
| <b>Safety Rated Current:</b>              | AC models   | 2 A max., fuse externally 1.6 A quick acting                 |                             |
|   | DC models: All except MA-35                                     | 1 A, fuse externally 800 mA quick acting                     |                             |
|   | DC model: MA-35   | 0.3 A max., fuse externally 0.2 A quick acting               |                             |
| <b>Internal Fuse</b>                      | AC models   | 2 A fast acting  |                             |
|   | DC models: All except MA-35                                     | 1 A fast acting  |                             |
| <b>External Fuse (Customer Supplied)</b>  | AC models   | 1.6 A fast acting  |                             |
|   | DC models   | 0.8 A fast acting  |                             |
| <b>Electrical Life:</b>                   | 1 x 10 <sup>6</sup>   |  |                             |
| <b>Mechanical—Special Safety Reed</b>     | <b>Safety</b>   | <b>Aux.</b>  |                             |
| <b>Closing Time:</b>                      | 3.0 mS  | 0.5 mS   |                             |
| <b>Drop-Out Time:</b>                     | 2.1 mS  | 0.3 mS   |                             |
| <b>Bounce Time:</b>                       | 0.7 mS  | 0.7 mS   |                             |
| <b>Shock:</b>                             | 10 G  | 10 G   |                             |
| <b>Vibration:</b>                         | 10 G, 50 to 100 Hz  |  |                             |
| <b>Mechanical</b>                         |   |  |                             |
| <b>Mounting:</b>                          | Any position  |  |                             |
| <b>Case Material:</b>                     | Stainless steel   |  |                             |
| <b>Actuator Material:</b>                 | Stainless steel   |  |                             |
| <b>Wiring Connection:</b>                 | Various lengths or male M12 micro connector                     |  |                             |
| <b>Weight:</b>                            | 600 g (1 lb. 5 oz.)   |  |                             |
| <b>Color:</b>                             | Stainless steel   |  |                             |
| <b>Mechanical Life:</b>                   | 10 x 10 <sup>6</sup>  |  |                             |
| <b>Environmental</b>                      |   |  |                             |
| <b>Protection:</b>                        | IP67 (NEMA 6)   |  |                             |
| <b>Operating Temperature:</b>             | MA-S2, S20, S21   | -10 to 125°C (14 to 257°F)                                   |                             |
|   | MA-34, 35, 36   | -10 to 55°C (14 to 131°F)                                    |                             |
| <b>Compliance</b>                         |   |  |                             |
| <b>Standards:</b>                         | EN1088, EN292, EN60204-1  |  |                             |
| <b>Approvals/Listings:</b>                | CE marked for all applicable directives                         |  |                             |
|   | MA-S2, S20, S21   | UL and C-UL  |                             |
|   | MA-34, 35, 36   | UL and C-UL  |                             |

Specifications are subject to change without notice.

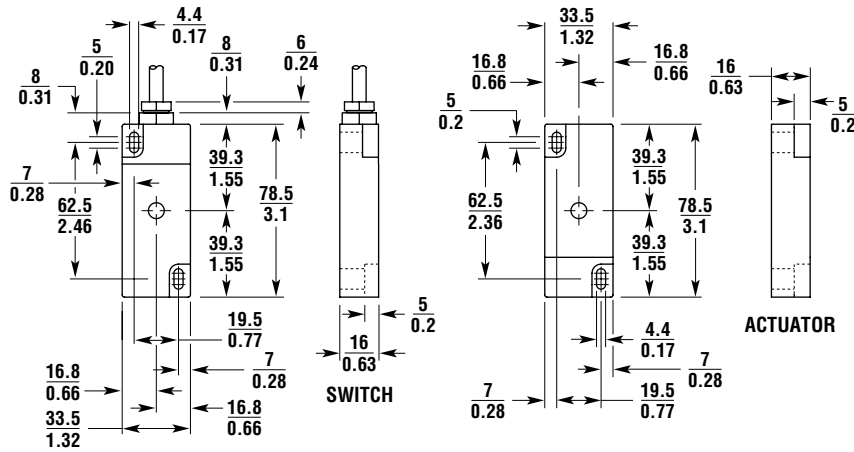
Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)— i.e., with the guard closed, actuator in place, and the machine able to be started.

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safety interlock switches

## ■ Dimensions — mm/in.

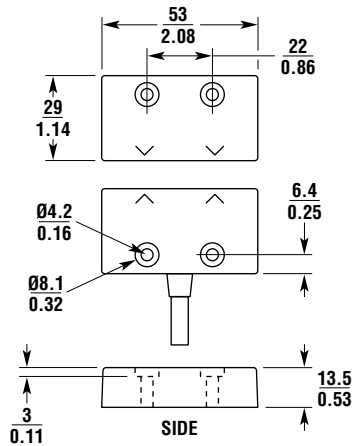
MA-S2, S20, S21



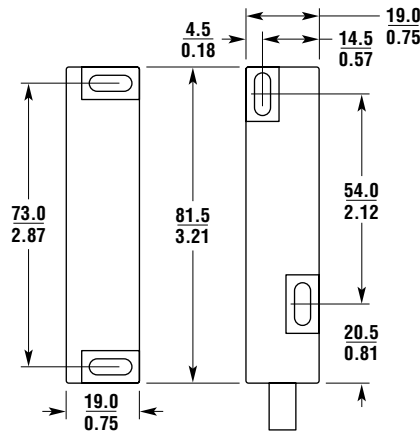
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MA-34, 35



MA-36



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**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

## ■ Ordering

| Model   | Contacts      | Wiring Entry                                | Part No.   |
|---|---------------|---|------------|
| <b>AC ONLY</b>  |               |   |            |
| MA-S2ASC3   | 1 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-0400 |
| MA-S20ASC3  | 2 N/C         | 3 m cable, pre-wired                        | 44507-0420 |
| MA-S21ASC3  | 2 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-0440 |
| MA-36AS10C3   | 1 N/C         | 3 m cable, pre-wired                        | 44507-3650 |
| MA-36AS10CC   | 1 N/C         | Connector, micro dual key way               | 44507-3659 |
| MA-36AS10CC5  | 1 N/C         | Connector, micro dual key way + 5 m cable   | 44507-3658 |
| <b>DC ONLY</b>  |               |   |            |
| MA-S2DSC3   | 1 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-0410 |
| MA-S20DSC3  | 2 N/C         | 3 m cable, pre-wired                        | 44507-0430 |
| MA-S21DSC3  | 2 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-0450 |
| MA-34DS10C3   | 1 N/C         | 3 m cable, pre-wired                        | 44507-3410 |
| MA-34DS10C10  | 1 N/C         | 10 m cable, pre-wired                       | 44507-3411 |
| MA-34DS11C3   | 1 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-3420 |
| MA-35DS21C3   | 2 N/C + 1 N/O | 3 m cable, pre-wired (300 mA max.)          | 44507-3540 |
| MA-35DS21C5   | 2 N/C + 1 N/O | 5 m cable, pre-wired (300 mA max.)          | 44507-3541 |
| MA-35DS21C5HT   | 2 N/C + 1 N/O | 5 m HT cable, pre-wired (300 mA max.)       | 44507-3542 |
| MA-35DS21C12  | 2 N/C + 1 N/O | 12 m cable, pre-wired (300 mA max.)         | 44507-3543 |
| MA-35DS21CC   | 2 N/C + 1 N/O | Connector, micro dual key way (300 mA max.) | 44507-3549 |
| MA-36DS10C3   | 1 N/C         | 3 m cable, pre-wired                        | 44507-3610 |
| MA-36DS11C3   | 1 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-3620 |
| MA-36DS20C3   | 2 N/C         | 3 m cable, pre-wired                        | 44507-3630 |
| MA-36DS21C3   | 2 N/C + 1 N/O | 3 m cable, pre-wired                        | 44507-3640 |
| Replacement Actuator for MA-S2, S20, S21, Stainless Steel |               |   | 44507-0760 |
| Replacement Actuator for MA-34, Stainless Steel           |               |   | 44507-0734 |
| Replacement Actuator for MA-35, Stainless Steel           |               |   | 44507-0735 |
| Replacement Actuator for MA-36, Stainless Steel           |               |   | 44507-0736 |
| Accessories (see page G238)                               |               |   |            |

■ = New product

 Universal Mounting Brackets can be used with this product. See page G241 for details.

G

safety interlock switches