

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 Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days



Conforms to EN1088, EN292, EN60204-1
UL and C-UL listed

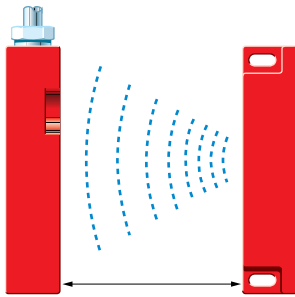
Specifications

Electrical	All Models Unless Indicated		
Safety Contacts:	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
Safety Contact Operating Distance:		Make 7-12 mm (0.28-0.47 in.); Break 12-25 mm (0.47 to 0.98 in.)	
Auxiliary Contacts:	MA-S2, S21, 34, 35, 36	1 N/O	
Aux. Contact Operating Distance:	MA-S2, S21, 34, 35, S36	Make 10-13 mm (0.39-0.51 in.); Break 8-10 mm (0.31-0.39 in.)	
Safety Rated Voltage:	AC models	230 VAC	
	DC models	30 VDC	
Safety Rated Current:	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	
Internal Fuse	AC models	2 A fast acting	
	DC models: All except MA-35	1 A fast acting	
External Fuse (Customer Supplied)	AC models	1.6 A fast acting	
	DC models	0.8 A fast acting	
Electrical Life:		1 x 10 ⁶	
Mechanical—Special Safety Reed		Safety.	Aux.
Closing Time:		3.0 mS	0.5 mS
Drop-Out Time:		2.1 mS	0.3 mS
Bounce Time:		0.7 mS	0.7 mS
Shock:		10 G	10 G
Vibration:		10 G, 50 to 100 Hz	
Mechanical			
Mounting:		Any position	
Case & Actuator Material:		Stainless steel	
Wiring Connection:		Various lengths or male M12 micro connector	
Weight:		600 g (1 lb. 5 oz.)	
Color:		Stainless steel	
Mechanical Life:		10 x 10 ⁶	
Environmental			
Protection:		IP67 (NEMA 6)	
Operating Temperature:	MA-S2, S20, S21	-10 to 95°C (14 to 203°F); Connector Models: -10 to 55°C (14 to 131°F)	
	MA-34, 35, 36	-10 to 55°C (14 to 131°F)	
	MA-35HT	-10 to 125°C (14 to 257°F)	
Storage Temperature		-20 to 70°C (-4 to 158°F)	
Compliance			
Standards:	EN1088, EN292, EN60204-1		
Approvals/Listings:	CE marked for all applicable directives		
	MA-S2, S20, S21	UL and C-UL	
	MA-34, 35, 36	UL and C-UL	
Reliability Data	per EN ISO 13849-1: – B10d: 2.00E+06		

Specifications are subject to change without notice. Note: The safety contacts of the 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.

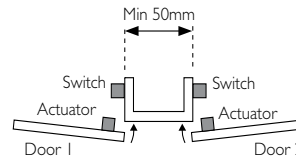
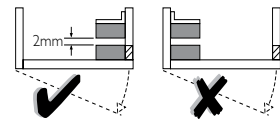
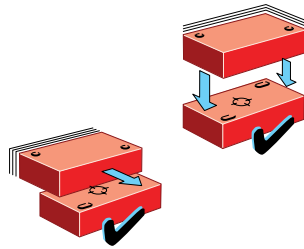
Operation

Operating Principle



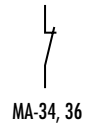
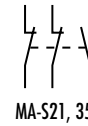
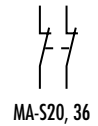
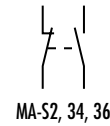
Encapsulated in the MA Series is a unique high-power industrial reed which is de-rated by a non-resettable overload protection circuit depending on switch type. On presenting the actuator to the switch, the high intensity magnetic field from the actuator causes the contacts to close. On removing the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

Mounting Examples

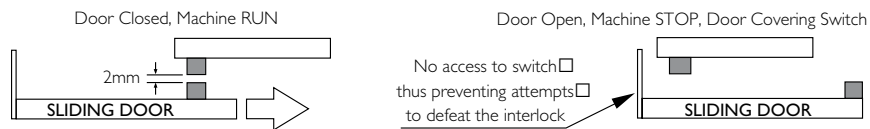


It is advisable, where possible, to mount the switch and actuator on non-ferrous materials otherwise it may affect the operating distances.

Contact Arrangement



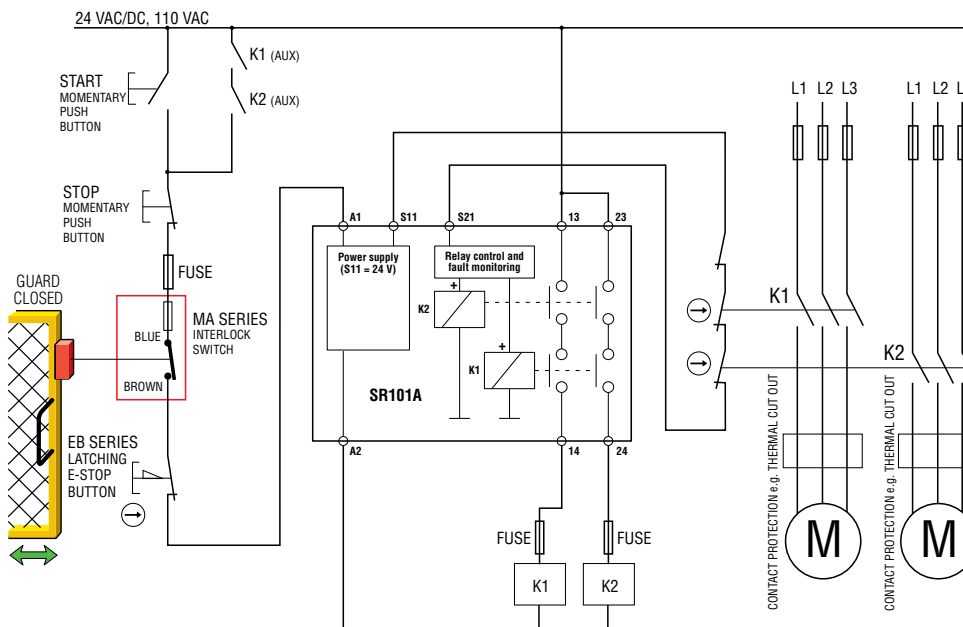
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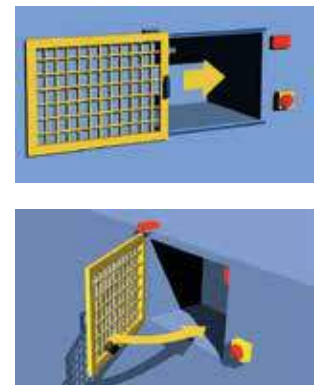
Wherever possible the units should be mounted so that no access can be obtained to the switch when the guard door is open, thus preventing attempts to defeat the safety system.

Applications

Typical Application of MA Series with a Safety Monitoring Relay



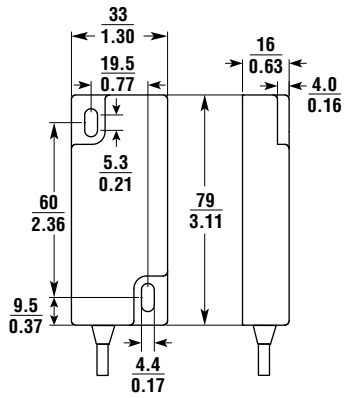
Typical applications are on sliding guard doors or swinging guard doors.



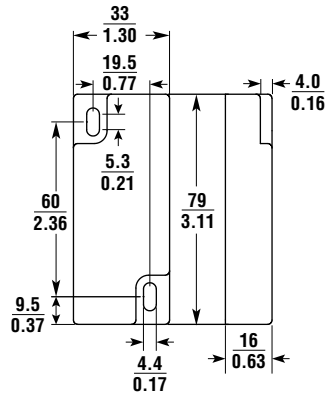
Dimensions

(mm/in.)

MA-S2, S20, S21

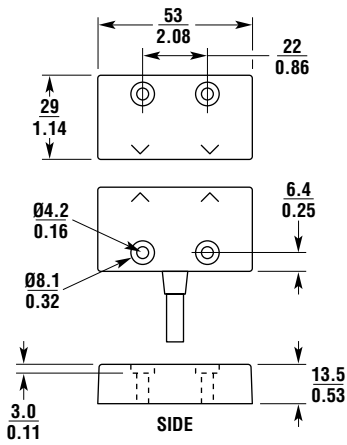


SWITCH



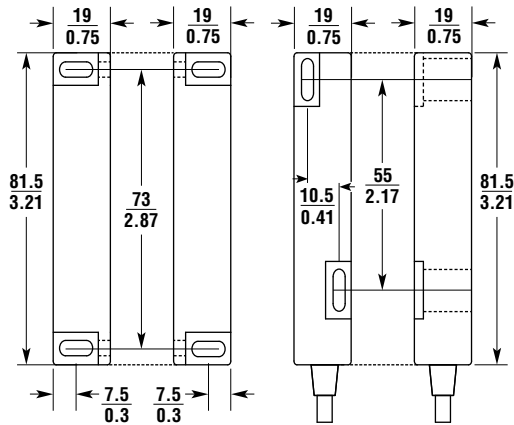
ACTUATOR

MA-34, 35



SIDE

MA-36



ACTUATOR

SWITCH



Ordering

Model	Contacts	Wiring Entry	Part No.
AC Only			
MA-S2ASC3	1 N/C + 1 N/O	3 m cable, pre-wired	44507-0400
MA-S2ASC10	1 N/C + 1N/O	10 m cable, pre-wired	44507-0800
MA-S20ASC3	2 N/C	3 m cable, pre-wired	44507-0420
MA-S20ASC10	2N/C	10 m cable, pre-wired	44507-0820
MA-S21ASC3	2 N/C + 1 N/O	3 m cable, pre-wired	44507-0440
MA-S21ASC10	2N/C + 1N/O	10 m cable, pre-wired	44507-0840
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
DC Only			
MA-S2DSC3	1 N/C + 1 N/O	3 m cable, pre-wired	44507-0410
MA-S2DSC10	1 N/C + 1N/O	10 m cable, pre-wired	44507-0810
MA-S20DSC3	2 N/C	3 m cable, pre-wired	44507-0430
MA-S20DSC10	2N/C	10 m cable, pre-wired	44507-0830
MA-S21DSC3	2 N/C + 1 N/O	3 m cable, pre-wired	44507-0450
MA-S21DSC10	2N/C + 1N/O	10 m cable, pre-wired	44507-0850
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
Accessories			
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

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Universal Mounting Brackets can be used with this product.

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