



#### KEEP THIS GUIDE FOR FUTURE REFERENCE

This information is designed to help suitably qualified personnel install and operate Mechan Safety Switch equipment.

Before using this product, read this guide thoroughly along with any relevant European and/or National standards e.g. Machinery Directive 89/392/EEC and its amendments, Provision and Use of Work Equipment Regulations.

**Further information can be obtained from  
Mechan Controls**

#### Description

MAGNASAFE MS1 safety switches are magnetically operated non-contact safety switch for use in machine guarding applications.

The non-contact operation makes the MS1 easy to install and tolerant to misalignment, providing a simple and reliable solution to machine guard interlocking.

The MS1 is manufactured in a robust ABS housing, and both switch and actuator are fully sealed to IP67 and suitable for use in wet or dusty environments

With correct installation, the MS1 safety switches comply with the guidelines given in EN1088.

#### Operation

When the MS1 safety switch and actuator are within the specified operating range (See table on page 3 for switching distances), the **Safety Contacts** will be closed and the **Auxiliary Contact** will be open.

When the actuator moves out of the operating range, the **Safety Contacts** will open and the **Auxiliary Contact** will close for indication.

The MS1 safety switch and actuator are designed to approach each other from most angles. When the switch is closed the targets on the printed face of the switch must be aligned.

#### Applications

Machine guards where door locking is not required.  
Food and Beverage packing/filling systems  
Diary  
Pharmaceutical  
Paper Industry  
Can Forming and Filling, (Aluminum, Steel, Plastic)  
Semiconductor Manufacture/Assembly.



#### Approvals

|    |  |
|----|--|
| CE | Complies with the relevant sections of the CE marking directive. |
| UL | UL 508, Industrial Control Equipment                             |

#### EUROPEAN DIRECTIVES

|   |
|---|
| Machinery Directive 98/37/EC                      |
| Low Voltage Directive 73/23/EC                    |
| Electromagnetic Compatibility Directive 89/336/EC |

#### EUROPEAN STANDARDS

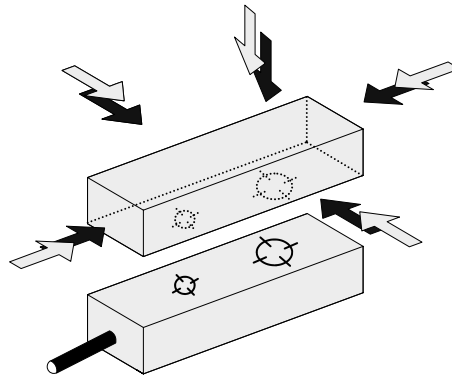
|              |   |
|--------------|---|
| EN292        | Safety of Machinery<br>Basic concepts, general principles for design.             |
| EN 60204     | Safety of Machinery<br>Electrical equipment of machines.                          |
| EN 954-1     | Safety of Machinery<br>Safety related parts of controls systems                   |
| EN 1088      | Interlocking devices associated with guards.                                      |
| EN 60947-5-3 | Safety of Machinery<br>Specification for low voltage switchgear and control gear. |

#### Declaration of Conformity

A Declaration of Conformity may be obtained from Mechan Controls PLC, Tel +44(0)1695 722264 or from the Mechan Web Site at [www.mechancontrols.co.uk](http://www.mechancontrols.co.uk)

## Mounting

The MS1 safety switches can approach each other from most angles. When the guard is closed the targets on the printed face of the switch and actuator must be aligned.



Mount the switch on to the machine frame and the Actuator on to the opening edge of the door. Always try to mount the switch on non-ferrous material. (*Ferrous materials may reduce the switching distance.*)

Use the tamper proof screws provided to make more secure.

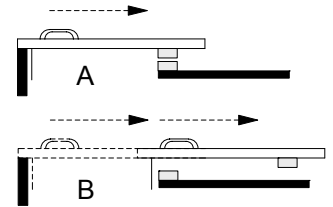
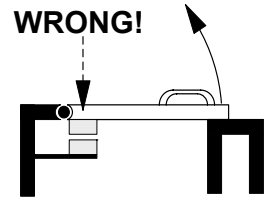
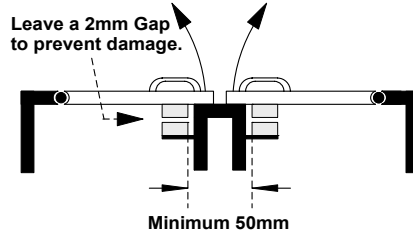
Do not use the safety switch as a door stop.

Leave a minimum of 50 mm between any adjacent switches.

EN 1088

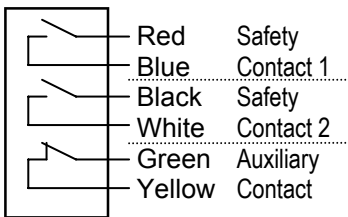
Provides some mounting suggestions, see example opposite.

When fixing the safety switch to a sliding door (A), ensure that when the door is opened (B) it is not easily accessible, helping prevent the system being overridden.

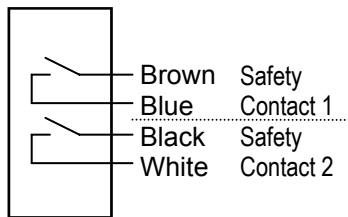


## Contacts & Connections

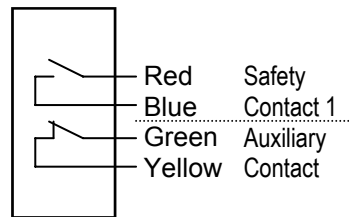
### MS1-21 ( ac or dc)



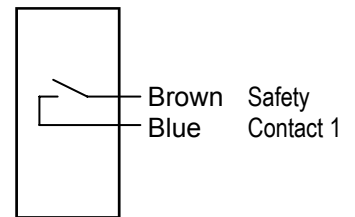
### MS1-20 ( ac or dc)



### MS1-11 ( ac or dc)



### MS1-10 ( ac or dc)



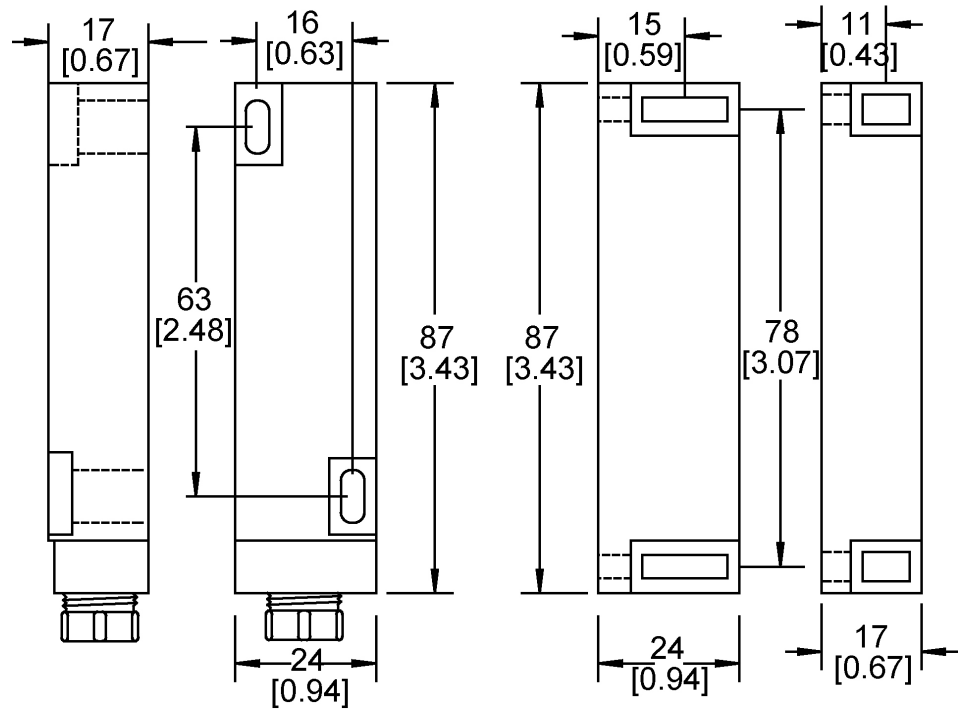
**All Safety Contacts require an external fuse.**

|                                   | Safety Contact External Fuse<br>AC | Safety Contact External Fuse<br>DC |
|-----------------------------------|------------------------------------|------------------------------------|
| MS1-21 / MS1-20 / MS1-11 / MS1-10 | 1.6 Amps quick blow                | 0.8 Amps Quick Blow                |
| MS1-10-110VAC                     | 2.5 Amps quick blow                | N/A                                |

## Dimensions

### MS1 RED ABS HOUSING

Dimensions in mm and [inches in brackets]



**SWITCH**

**ACTUATOR**

## Technical Specifications

| Type                                 | AC   | DC   | 110V AC              |
|--------------------------------------|--|--|----------------------|
| Contact Options                      | 2 x N/O Safety & 1 x N/C Aux.<br>2 x N/O Safety<br>1 x N/O Safety & 1 x N/C Aux.<br>1 x N/O Safety | 2 x N/O Safety & 1 x N/C Aux.<br>2 x N/O Safety<br>1 x N/O Safety & 1 x N/C Aux.<br>1 x N/O Safety | 1 x N/O Safety       |
| Safety Contact Rating                | 230Vac/2Amps   | 30Vdc / 1Amp Inductive/Resistive   | 110Vac/3Amps         |
| Safety Contact Operating Distance    | 10mm ON / 25mm OFF   | 10mm ON / 25mm OFF   | 10mm ON / 25mm OFF   |
| Safety Contact Close/Drop/Bounce     | 3ms / 2.1ms / 0.7ms  | 3ms / 2.1ms / 0.7ms  | 3ms / 2.1ms / 0.7ms  |
| Auxiliary Contact Rating             | 15W / 10VA   | 15W / 10VA   | N/A                  |
| Auxiliary Contact Operating Distance | 8mm OFF / 10mm ON  | 8mm OFF / 10mm ON  | N/A                  |
| Auxiliary Contact Close/Drop/Bounce  | 0.5ms / 0.3ms / 0.7ms  | 0.5ms / 0.3ms / 0.7ms  | N/A                  |
| Internal Fuse                        | 2Amp Fast Acting   | 1Amp Fast Acting   | 3Amp Fast Acting     |
| External Fuse (Customer Supplied)    | 1.6 Amps Fast Acting   | 0.8 Amp Fast Acting  | 2.5Amps Fast Acting  |
| IP Rating                            | IP67   | IP67   | IP67                 |
| Vibration / Shock                    | 50—100Hz / 10g   | 50—100Hz / 10g   | 50—100Hz / 10g       |
| Operating Temperature                | -10 to +55C  | -10 to +55C  | -10 to +55C          |
| Mounting & Fixture                   | Target to Target   | Target to Target   | Target to Target     |
| Connection                           | Pre-wired  | Pre-wired  | Pre-wired            |
| Construction                         | Red ABS Resin Filled   | Red ABS Resin Filled   | Red ABS Resin Filled |

## Part Numbers

| PART NUMBER             | DESCRIPTION  | STOCK CODE |
|-------------------------|--|------------|
| <b>DC</b>               |  |            |
| MS1-10-DC-03M           | 1 x N/O, DC, ABS, Safety Switch & Actuator, 3 metre Pre-wired            | 350.050    |
| MS1-11-DC-03M           | 1 x N/O + 1 x N/C, DC, ABS, Safety Switch & Actuator, 3 metre Pre-wired  | 350.051    |
| MS1-20-DC-03M           | 2 x N/O, DC, ABS, Safety Switch & Actuator, 3 metre Pre-wired            | 350.052    |
| MS1-20-DC-05M           | 2 x N/O, DC, ABS, Safety Switch & Actuator, 5 metre Pre-wired            | 350.054    |
| MS1-21-DC-03M           | 2 x N/O + 1 x N/C, DC, ABS, Safety Switch & Actuator, 3 metre Pre-wired  | 350.053    |
| <b>AC</b>               |  |            |
| MS1-10-AC-03M           | 1 x N/O, AC, ABS, Safety Switch & Actuator, 3 metre Pre-wired            | 350.000    |
| MS1-11-AC-03M           | 1 x N/O + 1 x N/C, AC, ABS, Safety Switch & Actuator, 3 metre Pre-wired  | 350.001    |
| MS1-11-AC-10M           | 1 x N/O + 1 x N/C, AC, ABS, Safety Switch & Actuator, 10 metre Pre-wired | 350.006    |
| MS1-20-AC-03M           | 2 x N/O, AC, ABS, Safety Switch & Actuator, 3 metre Pre-wired            | 350.002    |
| MS1-21-AC-03M           | 2 x N/O + 1 x N/C, AC, ABS, Safety Switch & Actuator, 3 metre Pre-wired  | 350.003    |
| MS1-21-AC-10M           | 2 x N/O + 1 x N/C, AC, ABS, Safety Switch & Actuator, 10 metre Pre-wired | 350.007    |
| MS1-10-110AC-03M        | 1 x N/O, 110vAC, ABS, Safety Switch & Actuator, 3 metre Pre-wired        | 350.004    |
| MS1-10-110AC-06M        | 1 x N/O, 110vAC, ABS, Safety Switch & Actuator, 6 metre Pre-wired        | 350.005    |
| LONGER CABLES AVAILABLE |  |            |

## Specification Changes

In the interest of product development, specifications are subject to change without notice.

It is the responsibility of the user to ensure compliance with any acts or by-laws that may be in force.

All information regarding Mechan Equipment is believed to be accurate at the time of printing. Responsibility cannot be accepted for errors or omissions.

