

## MF Series

### Operating Instructions for MF-2 Safety Switches

#### CAUTION

This information is designed to help suitably qualified personnel install and operate STI 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 it's amendments, Provision and Use of Work Equipment Regulations.

Further information can be obtained from  
**STI**

**KEEP THIS GUIDE FOR FUTURE REFERENCE**

#### Description

The MF Series safety switches are electronically operated non-contact safety switch for use in machine guarding applications.

The non-contact operation makes the MF-2 easy to install and tolerant to misalignment, providing a simple reliable solution to machine guard interlocking.

The electronic operation provides additional security and single point switching. This leads to a more reliable and secure long term safety solution.

The switch and actuator are IP67 rated and can be used in wet or dusty environments.

#### Operation

The MF-2 is designed for use with 'low inrush current' safety relays like the OMRON SR 131A and SR 231A. Maximum switching for long life performance is 500mA.

When installed on a machine guard, power is applied, and the switch and actuator are within the specified operating range (See table on page 4 for switching distances). The Normally Closed **Contact** will be closed and the Normally Open **Contact** will be open. The dual color LED will be GREEN. When the actuator moves out of the operating range, the Normally Closed **Contact** will open the Normally Open **Contact** will close. The dual color LED will be RED.

The MF-2 safety switch and actuator have a 10mm switching distance and can approach each other from most angles. When the switch is closed the targets on the printed face of the switch must be aligned. To Assure proper operation of the switch a minimum distance or gap of 2mm must be maintained between the Switch and actuator. See Mounting Section for details.

#### Applications

Interlocked guards where additional security required.  
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.



Pending

MF-2



#### Approvals

CE	Complies with the relevant sections of the CE marking directive.
UL	Pending

#### EUROPEAN DIRECTIVES

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

#### EUROPEAN STANDARDS

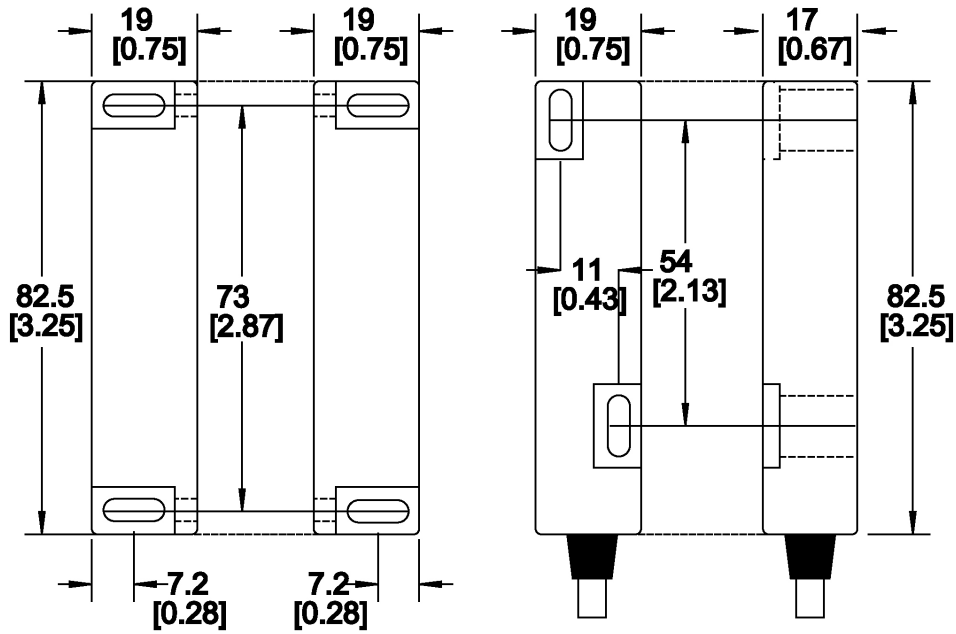
EN292	Safety of Machinery Basic concepts, general principles for design.
EN 60204	Safety of Machinery Electrical equipment of machines.
EN 954-1	Safety of Machinery Safety related parts of controls systems
EN 1088	Interlocking devices associated with guards.
EN 60947-5-3	Safety of Machinery Specification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

#### Declaration of Conformity

A Declaration of Conformity can be obtained from the OMRON STI Web Site: [WWW.STI.COM](http://WWW.STI.COM)

# DIMENSIONS

Dimensions in MM [Inches]



# MOUNTING

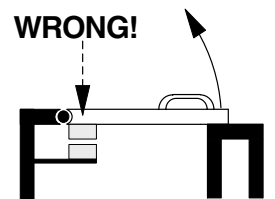
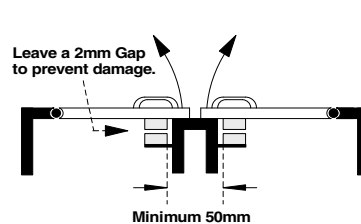
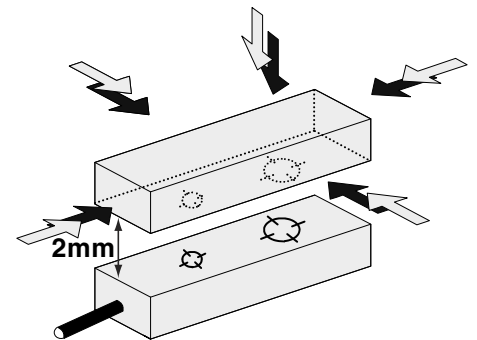
The MF-2 safety switches can approach each other from most angles. When the guard is closed the targets on the printed face of the switch and actuator must be aligned.

**IMPORTANT:** a minimum distance or gap of 2mm must be maintained between the switch and actuator to assure proper switch actuation. Failure to maintain this minimum gap may lead to nuisance faults on the switch controller unit.

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.

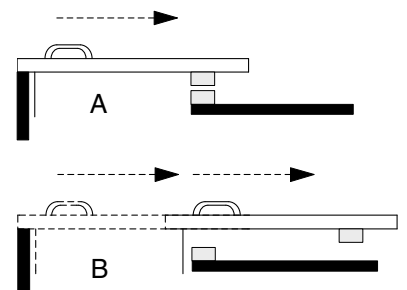
Do not use the safety switch as a door stop. Leave a minimum of 50 mm between any adjacent switches.



## EN 1088

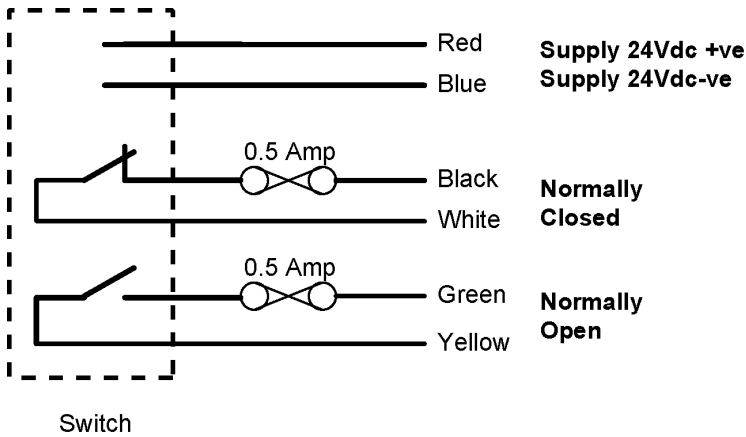
Provides some mounting suggestions, see example opposite.

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 & FUSES

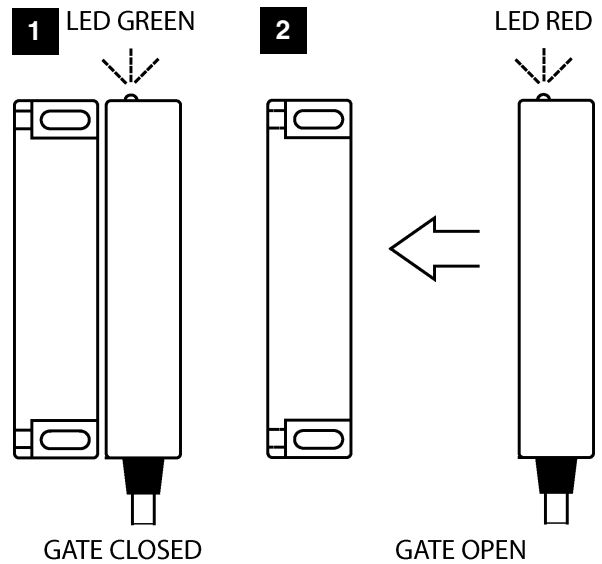
### MF-2 SAFETY SWITCH



#### NOTE

MF-2 Contacts shown when the actuator is in place.

## OPERATION



#### 1 POWER ON, GATE CLOSED

When the switch has power and the actuator is in place, the LED will be GREEN. The Normally Closed contact will be closed and the Normally Open contact will be open.

#### 2 POWER ON GATE OPEN

When the switch has power and the actuator is out of range, the LED will be RED. The Normally Closed contact will be open and the Normally Open contact will be closed.

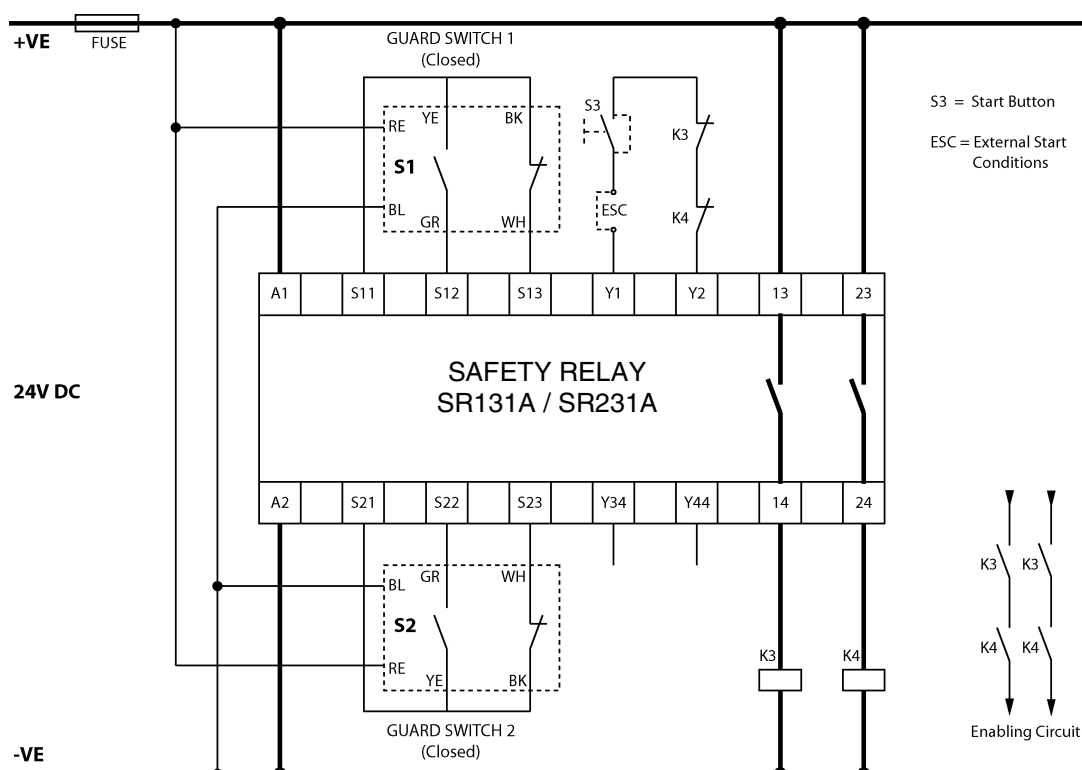
## CONNECTIONS to a Safety Relay

Example connection diagram to a Safety Relay for CAT 3.

The safety relay should require 1 x N/C + 1 x N/O input with a low inrush current input switching circuit. Examples of this type of relay are listed below

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SR131A / SR231A (See diagram below)



## TECHNICAL SPECIFICATION

TYPE		MF-2
Power Supply		24vDC
Power Consumption		2VA / 2W
Contacts Arrangements:		1 x N/C Contact; 1 x N/O Contact
Normally Closed Contact Rating	AC	110Vac / 500mA
	DC	24Vdc / 500mA
Normally Open Contact Rating	AC	110Vac / 500mA
	DC	24Vdc / 500mA
Contact Operating Distance		9mm ON / 10mm OFF
Minimum Gap between Actuator and Switch		2mm
Internal Fuse ( N/O + N/C )		1Amp Fast Acting
External Fuse (Customer Supplied)	AC / DC	500mA Fast Acting
IP Rating		IP67
Vibration / Shock		50—100Hz / 10g
Operating Temperature		-10 to +55C
Mounting & Fixture		Target to Target
Connection		Pre-wired
Cable length		Maximum 100m
Construction		RED ABS Resin Filled

### 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.

### Specification Changes

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



**OMRON**

**OMRON SCIENTIFIC TECHNOLOGIES, INC.**

6550 Dumbarton Circle  
Fremont CA 94555-3605 USA  
Tel: 1/510/608-3400  
Fax: 1/510/744-1442  
E-mail: sales@sti.com  
www.sti.com

*European Tech Support*  
Tel: +49 (0) 52 58 93 87 76  
Fax: +49 (0) 52 58 93 56 90