

**MA Series**

**Operating Instructions for MA-15 & MA-35 Safety Switches**

**KEEP THIS GUIDE FOR FUTURE REFERENCE**

This information is designed to help suitably qualified personnel install and operate Omron Scientific Technologies, Inc. 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 Omron Scientific Technologies, Inc.**

**Description**

The MA-15 & MA-35 safety switches are a magnet, non-contact safety switches for use in machine guarding applications.

**The MA-15 & MA-35 are designed to be connected to a safety control circuit which has less than 0.5 Amps inrush current.**

The MA-15 is manufactured in a robust ABS housing, and the MA-35 is manufactured in a 316 Grade Stainless Steel housing.

These switches are easy to install and tolerant to misalignment. Both switch and actuator are fully sealed to IP67 and suitable for use in wet or dusty environments

With correct installation, the MA-15 & MA-35 safety switches comply with the guidelines given in EN1088.

**Operation**

When the safety switch and actuator are within the specified operating range (see table on page 3 for switching distances), the N/C contacts will be closed and the N/O contacts will be open.

When the actuator moves out of the operating range, the N/C contacts will open and the N/O contacts will close. Both the N/C and N/O contacts may be used for safety.

The MA-15 & MA-35 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**

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

**MA-15**

**MA-35**



**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 can be obtained from the Omron Scientific Technologies, Inc. web Site: [www.sti.com](http://www.sti.com)

## Mounting

The MA-15 & MA-35 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.*)

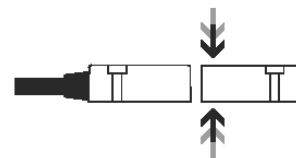
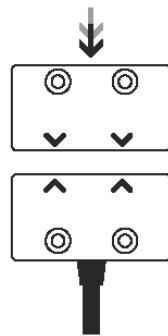
Use the tamper proof screws provided to make more secure.

Do not use the safety switch as a door stop.

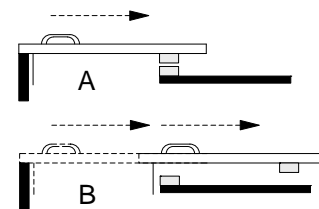
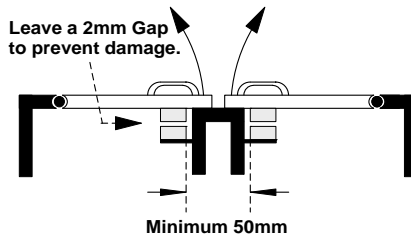
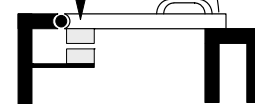
Leave a minimum of 50 mm between any adjacent switches.

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.



**WRONG!**

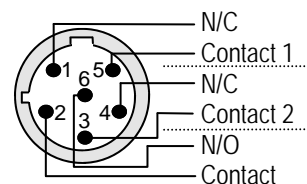
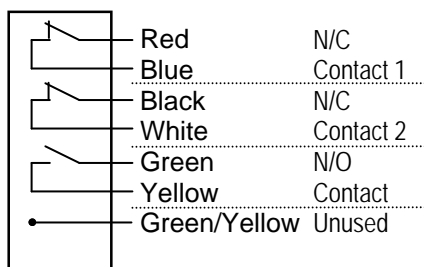
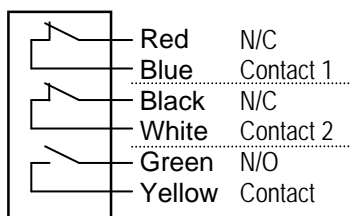


## Contacts & Connections

MA-15DP21C3  
MA-35DS21C3

MA-35DS21C5HT

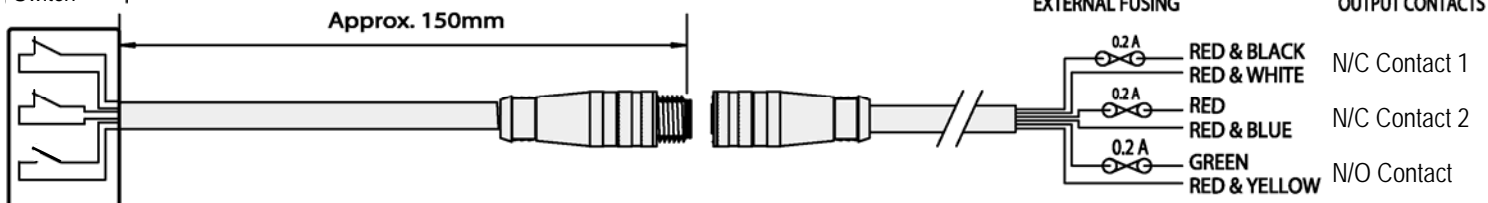
MA-15DP21CC  
MA-35DS21CC



## Quick Disconnect 'CC' Version

MA-15  
MA-35  
Switch

The MA-15 & MA-35 switches are available with an IP67, 6 pole 'pig tail' connector  
Connector specification: 6 pin, Micro dual key-way, 1/2" - 20 UNF



**All contacts should be fused externally**

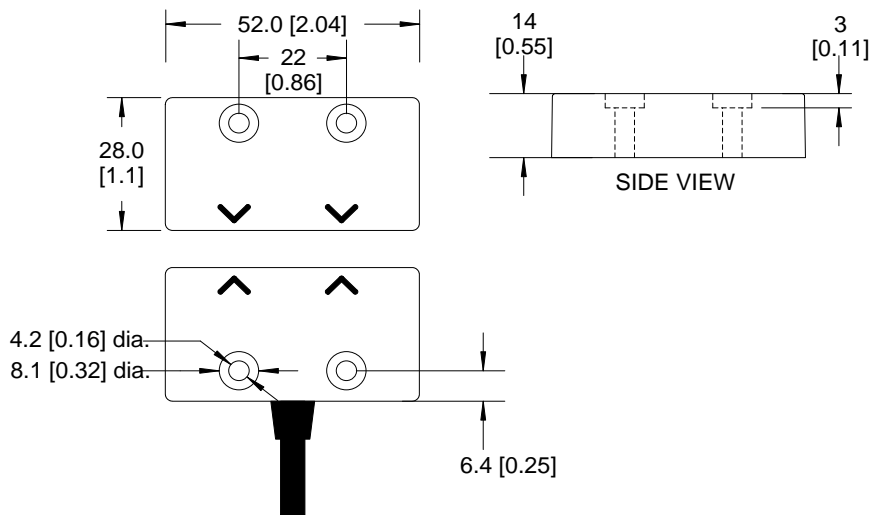
MA-15 & MA-35 All types

All Contacts

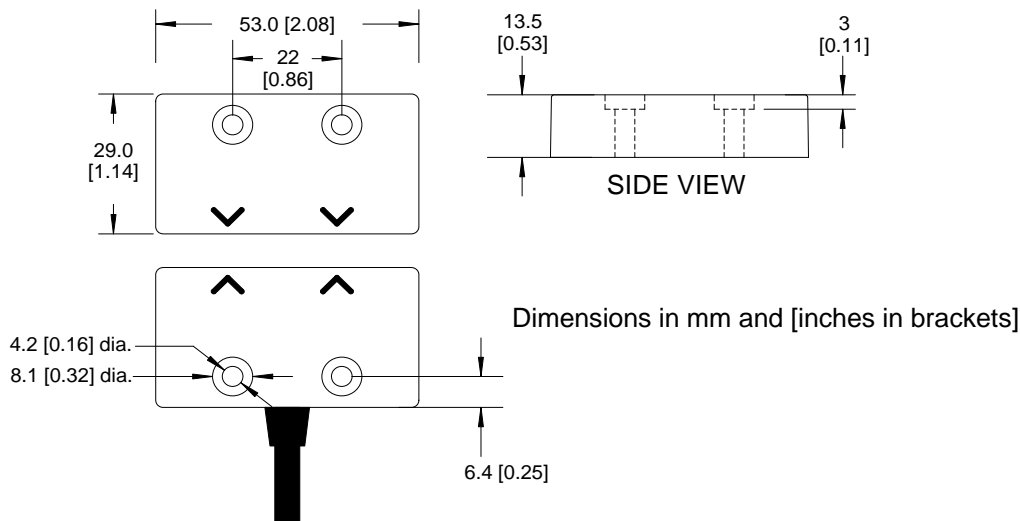
0.2 Amps Quick Blow

## Dimensions

### MA-15 Red ABS Housing



### MA-35 316 Stainless Steel



## Technical Specifications

| Type                              | ABS                    | DC   |  |                                    |
|-----------------------------------|------------------------|--|--|------------------------------------|
|                                   |                        | MA-15DP21C3 / MA-15DP21C5<br>MA-15DP21C6             | MA-15DP21CC  | MA-35DS21CC                        |
|                                   | <b>Stainless Steel</b> | <b>MA-35DS21C3 / MA-35DS21C5</b>                     |  |                                    |
| Contact Arrangement               |                        | 2xN/C & 1xN/O Aux.                                   | 2xN/C & 1xN/O  | 2xN/C & 1xN/O                      |
| N/C Contact Rating                |                        | 24Vdc / 0.3Amps<br>Inductive/ Res.                   | 24Vdc / 0.3Amps<br>Inductive/ Res.                   | 24Vdc / 0.3Amps<br>Inductive/ Res. |
| N/C Contact Operating Distance    |                        | 6mm ON / 17mm OFF                                    | 6mm ON / 17mm OFF                                    | 6mm ON / 17mm OFF                  |
| N/C Contact Close/Drop/Bounce     |                        | 0.3ms / 0.2ms / 0.7ms                                | 0.3ms / 0.2ms / 0.7ms                                | 0.3ms / 0.2ms / 0.7ms              |
| N/O Contact Rating                |                        | 24Vdc / 0.3Amps<br>Inductive/ Res.                   | 24Vdc / 0.3Amps<br>Inductive/ Res.                   | 24Vdc / 0.3Amps<br>Inductive/ Res. |
| N/O Contact Operating Distance    |                        | 6mm OFF / 17mm ON                                    | 6mm OFF / 17mm ON                                    | 6mm OFF / 17mm ON                  |
| N/O Contact Close/Drop/Bounce     |                        | 0.5ms / 0.3ms / 0.7ms                                | 0.5ms / 0.3ms / 0.7ms                                | 0.5ms / 0.3ms / 0.7ms              |
| External Fuse (Customer Supplied) |                        | 0.2 Amp Fast Acting                                  | 0.2 Amp Fast Acting                                  | 0.2 Amps 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 +95C                        |
| Mounting & Fixture                |                        | Target to Target                                     | Target to Target                                     | Target to Target                   |
| Connection                        |                        | Pre-wired cable                                      | M12 Quick Disconnect                                 | Pre-wired cable                    |
| Construction                      |                        | Red ABS Resin Filled or<br>316 Grade Stainless Steel | Red ABS Resin Filled or<br>316 Grade Stainless Steel | 316 Grade Stainless Steel          |

## **Specification Changes**

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

## **Note**

The safety contacts of the Omron Scientific Technologies, Inc. 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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