The PSA and MSA Non Contact Coded switches have been developed as a stand alone mountable device to provide a high level of fault detection and functional safety.

They can be mounted to guard doors to provide and maintain a high level of functional safety without the need to connect to external safety evaluators.

They have their own internal monitoring system and use force guided mechanical contacts and will maintain PLe / Category 4 (ISO13849-1) even with switches connected in series.

They are offered in high specification plastic housings or stainless steel housings and can be used in almost any environments including high pressure cleaning following contamination from foreign particles. The housings are compact and easy to fit on less than 40mm frame sections.

The PSA (Plastic) and the MSA (Stainless Steel 316) both have IP69K ingress protection and are suitable for most detergent washdown applications. The MSA Stainless Steel 316 version has a mirror polished (Ra4) surface finish and is suitable for CIP and SIP process applications.

Dual Actuator versions are available for use with “double door” guards

The typical sensing distance “on” is 12mm with wide tolerance to guard misalignment after setting.

**Safety Reliability**  ISO13849-1  PLe  Cat 4

All standalone switches employ 2 Force Guided Mechanical Relays and incorporate internal checking to ensure both relays are operational after each safety demand. If one relay fails to open or becomes inoperative the switch will lock out safe. Switches can be connected in series to maintain PLe / Cat 4 to ISO13849-1.

**Main user benefits**

1) A standalone mountable device able to provide interlocking control without the need for special additional controllers.
2) Feedback circuit check option is included for use when incorporating reset buttons and external contactor feedback checks.
3) Maintains PLe Cat 4 by internally checking the internal mechanical relays at each safety demand.
4) Connect up to 20 switches in series.
5) Ability to connect other switches and E Stops in series.
6) Output contacts will switch up to 230V, ac 3A.

**Functional Specification:**

High Functional Safety to ISO 13849-1 - up to PLe / Cat 4 to ISO13849-1.

Coded actuation to provide high tamperproof interlock security on Guard Doors.

2 Diagnostic LED’s:

LED1 Green - Indication of Safety Circuits Closed (Guard Closed, Actuator present, Feedback Circuit checked)
LED2 Yellow - Indication of Safety Circuits Open (Actuator removed)

Safety Outputs short circuit protected

1 Auxiliary circuit for indication of door open

M12 Male  8 way connector versions available (Flying Lead 250mm (10 inches)) and also optional series pluggable connectors.
Stand Alone Coded Non Contact Switches - Types: PSA-MSA

Connection example: Switches in series  PLe Cat.4

Two switches connected in series to give dual circuit safety outputs to machine contactors.

Safety Circuit 1 (Black/White) utilises internally checked force guided relay contacts and is connected in series with the corresponding Safety Circuit 2 (Yellow/Green) of the next switch.

Allows minimal wiring and higher current switching to K1 and K2 contactors.

A manual start and contactor feedback check is achieved by connecting K1(Aux) and K2(Aux) feedback contacts and momentary start button through the orange and brown feedback check.

Quick Connect (QC) Flying Lead 250mm M12 8 Way Male Plug Flying Lead Colours Circuit

<table>
<thead>
<tr>
<th>Quick Connect (QC)</th>
<th>Flying Lead Colours</th>
<th>Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flying Lead</td>
<td>Colours</td>
<td></td>
</tr>
<tr>
<td>Flying Lead</td>
<td>Colours</td>
<td>24Vdc +/-10%</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>Supply +24V,dc</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
<td>0V,dc</td>
</tr>
<tr>
<td>1</td>
<td>White</td>
<td>Safety Output 1 (Force guided relay)</td>
</tr>
<tr>
<td>7</td>
<td>Yellow</td>
<td>Safety Output 1 (Force guided relay)</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>Safety Output 2</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
<td>Reset / Check Circuit - Output</td>
</tr>
<tr>
<td>Not used</td>
<td>Orange</td>
<td>Reset / Check Circuit - Manual start</td>
</tr>
<tr>
<td>Not used</td>
<td>Pink</td>
<td>Reset / Check Circuit - Auto start</td>
</tr>
<tr>
<td>Not used</td>
<td>Grey</td>
<td>Auxiliary Feed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electronic +24V, dc 0.2A</td>
</tr>
</tbody>
</table>

Pluggable system: M12 8 Way Micro Connectors

Three switches connected in series to give dual circuit safety outputs to machine contactors.

System Parts:
- 3 x MSA or PSA with M12 Flying Lead Connectors
- 2 x Patch Cord (either 2m, 5m, or 10m)
- 3 x T Port
- 1 x End short plug
- 1 x M12 Female Lead

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>140101</td>
<td>M12 8 Way Female QC Lead</td>
<td>5m.</td>
</tr>
<tr>
<td>140102</td>
<td>M12 8 Way Female QC Lead</td>
<td>10m.</td>
</tr>
<tr>
<td>140201</td>
<td>Patch Cord M12 Male to Female</td>
<td>2m.</td>
</tr>
<tr>
<td>140202</td>
<td>Patch Cord M12 Male to Female</td>
<td>5m.</td>
</tr>
<tr>
<td>140203</td>
<td>Patch Cord M12 Male to Female</td>
<td>10m.</td>
</tr>
<tr>
<td>140204</td>
<td>T Port</td>
<td></td>
</tr>
<tr>
<td>140205</td>
<td>Short Plug</td>
<td></td>
</tr>
</tbody>
</table>
Stand Alone Coded Non Contact Switches - Types: PSA-MSA

**Standards**
- EN1088
- IEC 60947-5-3
- IEC 60947-5-1
- EN 60204-1
- ISO 13849-1
- EN62061
- EN 954-1
- UL508

**Safety Classification and Reliability Data:**
- **Switching Reliability:** 3.3 x 10^6 operations at 100mA load
- **ISO 13849-1**
- **EN 60204-1**
- **Safety Data - Annual Usage:** up to PLe depending upon system architecture
- **Safety Data - Annual Usage:** up to SIL3 depending upon system architecture
- **Proof Test Interval (Life):** 47 years
- **MTTFd:** 470 years
- **Power Supply:** 24Vdc +/- 10% (Consumption 100mA max.)
- **Dielectric withstand:** 24Vdc 0.5A
- **Insulation Resistance:** 250Vdc 100 Mohms
- **Recommended setting gap:** 5mm
- **Switching Distance:** Sao 10mm Close
- **Approach speed:** Sar 15mm Open
- **Tolerance to misalignment:** 5mm in any direction from 5mm setting gap
- **Approach speed:** 200mm/min., to 1000mm/min.
- **Body Material:** PSA - High Specification Polyester
- **MSA - Stainless Steel 316**
- **Temperature Range:** -25 / 45°C
- **Vibration Resistant:** IEC 68-2-6 10-55 Hz. 1mm
- **Shock Resistance:** IEC 68-2-27 11ms 30g
- **Enclosure Protection:** IP65K / IP67
- **Cable Type:** PVC 10core 7mm O.D.
- **Mounting Bolts:** 2 x M4

### Sales Number | Single Actuator Sensing | Body Material | Cable Length
--- | --- | --- | ---
130001 | MSA | S/Steel 316 | 2M
130002 | MSA | S/Steel 316 | 5M
130003 | MSA | S/Steel 316 | 10M
130004 | MSA | S/Steel 316 | QC-M12

### Sales Number | Dual Actuator Sensing | Body Material | Cable Length
--- | --- | --- | ---
130101 | MSA-D | S/Steel 316 | 2M
130102 | MSA-D | S/Steel 316 | 5M
130103 | MSA-D | S/Steel 316 | 10M
130104 | MSA-D | S/Steel 316 | QC-M12

### Sales Number | Single Actuator Sensing | Body Material | Cable Length
--- | --- | --- | ---
117001 | PSA | Plastic | 2M
117002 | PSA | Plastic | 5M
117003 | PSA | Plastic | 10M
117004 | PSA | Plastic | QC-M12

### Sales Number | Dual Actuator Sensing | Body Material | Cable Length
--- | --- | --- | ---
117101 | PSA-D | Plastic | 2M
117102 | PSA-D | Plastic | 5M
117103 | PSA-D | Plastic | 10M
117104 | PSA-D | Plastic | QC-M12

**Female QC Lead**
- 140101 Female QC Lead M12 Female 5m. 8-way
- 140102 Female QC Lead M12 Female 10m. 8-way

**Female QC Lead**
- 130200 MSA Replacement Actuator
- 117200 PSA Replacement Actuator

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