

# IDEM LMF Series Non-Contact RFID Coded Safety Switches



**Actuator Operating Direction**



## Description

IDEM's LMF Series of non-contact RFID Coded Safety Switches has been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required, where high-hygiene requirements exist (e.g. in food industry hosedown applications) or where long mechanical life is required.

When used in combination with a dual channel safety relay or control device, Non-Contact Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

## Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>10mm) sensing distance
- High tolerance for misalignment after sensing
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provide a high level of anti-tamper protection
- Suitable for use in high-hygiene requirement areas (e.g. food industry hosedown)
- No moving or touching parts for long mechanical life
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

| LMF Series Non-Contact RFID Coded Safety Switches Selection Guide |          |                     |                     |                            |                            |   |
|---|----------|---------------------|---------------------|----------------------------|----------------------------|---|
| Part Number   | Price    | Body Material       | Coding              | Connection                 | Cable Length (Dimension A) | Outputs                                       |
| <a href="#"><u>LMF-U-406002</u></a>                               | \$234.00 | 316 stainless steel | Uniquely coded RFID | Pigtail                    | 5m [16.4 ft]               | 2 NC safety outputs<br>1 NO monitoring output |
| <a href="#"><u>LMF-U-406003</u></a>                               | \$250.00 | 316 stainless steel | Uniquely coded RFID | Pigtail                    | 10m [32.8 ft]              | 2 NC safety outputs<br>1 NO monitoring output |
| <a href="#"><u>LMF-U-406004</u></a>                               | \$257.00 | 316 stainless steel | Uniquely coded RFID | 8-pin M12 quick-disconnect | 250mm [9.8 in]             | 2 NC safety outputs<br>1 NO monitoring output |
| <a href="#"><u>LMF-M-406102</u></a>                               | \$234.00 | 316 stainless steel | Master coded RFID   | Pigtail                    | 5m [16.4 ft]               | 2 NC safety outputs<br>1 NO monitoring output |
| <a href="#"><u>LMF-M-406103</u></a>                               | \$250.00 | 316 stainless steel | Master coded RFID   | Pigtail                    | 10m [32.8 ft]              | 2 NC safety outputs<br>1 NO monitoring output |
| <a href="#"><u>LMF-M-406104</u></a>                               | \$257.00 | 316 stainless steel | Master coded RFID   | 8-pin M12 quick-disconnect | 250mm [9.8 in]             | 2 NC safety outputs<br>1 NO monitoring output |

| LMF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement |         |                     |        |
|---|---------|---------------------|--------|
| Part Number   | Price   | Body Material       | Coding |
| <a href="#"><u>LMF-406201</u></a>   | \$57.00 | 316 stainless steel | Master |

| Female Quick Disconnect Lead  |         |                |                                 |
|-------------------------------|---------|----------------|---------------------------------|
| Part Number                   | Price   | Description    | Exit Type/Cable Length          |
| <a href="#"><u>140101</u></a> | \$53.00 | Female QD Lead | M12 Female 5m [16.4 ft], 8-pin  |
| <a href="#"><u>140102</u></a> | \$80.00 | Female QD Lead | M12 Female 10m [32.8 ft], 8-pin |



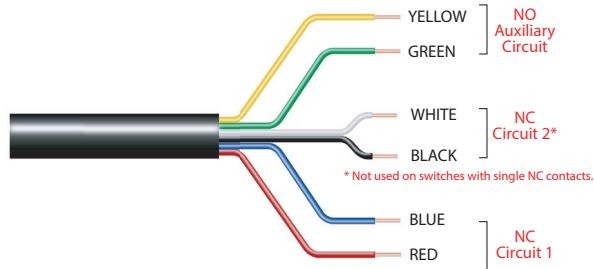


# IDEM Non-Contact Safety Switches

## Electrical Connections and Dimensions

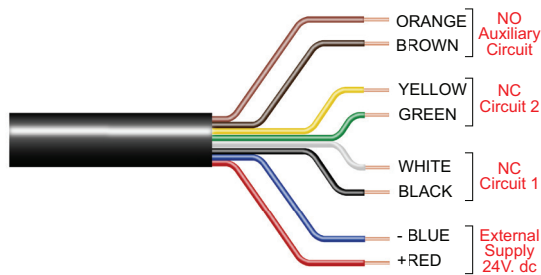
### Electrical Connections

#### Magnetic Switches



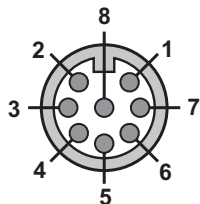
| Magnetic Switches - Electrical Connections |            |                                    |
|--|------------|------------------------------------|
| Quick Disconnect Connector Pin Out         | Lead Color | Type of Circuit (Actuator Present) |
| 4  | Yellow     | Auxiliary (NO)                     |
| 6  | Green      | Auxiliary (NO)                     |
| 7  | Black      | NC2                                |
| 1  | White      | NC2                                |
| 2  | Red        | NC1                                |
| 3  | Blue       | NC1                                |

#### Coded Magnetic and RFID Switches



| Coded Magnetic Switches - Electrical Connections |            |                                    |                                  |
|--|------------|------------------------------------|----------------------------------|
| Quick Disconnect Connector Pin Out               | Lead Color | Type of Circuit (Actuator Present) | Output Types (Solid State)       |
| 8  | Orange     | Auxiliary (NO)                     | 200 mA max. 24 VDC               |
| 5  | Brown      | Auxiliary (NO)                     |                                  |
| 4  | Yellow     | NC2 +                              | 200 mA max. 24 VDC (Optocoupler) |
| 6  | Green      | NC2 -                              |                                  |
| 7  | Black      | NC1 +                              | 200 mA max. 24 VDC (Optocoupler) |
| 1  | White      | NC1 -                              |                                  |
| 2  | Red        | Supply +24 VDC                     | Supply 24 VDC +10% / -15%        |
| 3  | Blue       | Supply 0VDC                        |                                  |

#### Connection Colors

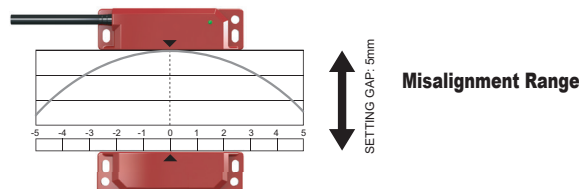


Pin View from Switch  
M12 Male

# IDEM Non-Contact Safety Switches Specifications

| Non-contact Safety Switches Specifications         |   |  |  |
|--|---|--|--|
|  | Non-Contact Magnetic Switches   | Non-Contact Coded Magnetic Switches                    | Non-Contact RFID Coded Switches        |
| <b>Safety Classification and Reliability Data</b>  |   |  |  |
| Switching Reliability (B10d)                       | 3.3 x 10 <sup>6</sup> operations at 100mA load  | No mechanical parts implemented                        | No mechanical parts implemented        |
| ISO 13849-1  | Up to Category 4  |  |  |
| ISO 13849-1  | Up to PLe depending upon system architecture  |  |  |
| EN 62061   | Up to SIL3 depending upon system architecture   |  |  |
| Safety Data - Annual Usage                         | 8 cycles per hour / 24 hours per day / 365 days   |  |  |
| PFHd   | 2.8 x 10 <sup>-10</sup>   | 2.6 x 10 <sup>-10</sup>                                | 4.77 x 10 <sup>-10</sup>               |
| Proof Test Interval (Life)                         | 20 years  |  |  |
| MTTFd  | 470 years   | 866 years  | 1100 years                             |
| Agency Approvals                                   | CE, cULus   |  |  |
| <b>Electrical and General Specifications</b>       |   |  |  |
| Contact Ratings: Safety Contact NC                 | MPR: Voltage free: 250VAC, 0.5 A max.   | 24VDC, 0.2 A max (optocoupler)                         | 24VDC, 0.2 A max (optocoupler)         |
|  | LPR, LMR, SPR, SMR, SMR-F:<br>Voltage free: 250VAC, 1.0 A max.  |  |  |
|  | CPR, CMR, CMR-F, WPR:<br>Voltage free: 250VAC, 2.0 A max.   |  |  |
|  | BPR, BMR:<br>240VAC, 24VAC/DC, 1.0 A max.   |  |  |
| Contact Ratings: Monitoring (Auxiliary) Contact NO | Voltage free: 24VDC, 0.2 A max.   | 24VDC, 0.2A max.                                       | 24VDC, 0.2A max.                       |
| Recommended Fuses (NC Circuits)                    | MPR: Fuse externally 0.4 A (F)  | NA   | NA                                     |
|  | LPR, LMR, SPR, SMR, SMR-F, CMR,<br>CMR-F: Fuse externally 0.8 A (F)   |  |  |
|  | CPR, WPR: Fuse externally 1.6 A (F)   |  |  |
|  | BPR, BMR:<br>Fuse externally 0.5 A (F)  |  |  |
| Contact Release Time                               | <2ms  | NA   | NA                                     |
| Initial Contact Resistance                         | <0.5 Ω  | NA   | NA                                     |
| Minimum Switched Current                           | 10 DC, 1mA  |  |  |
| Dielectric Withstand                               | 250VAC  |  |  |
| Insulation Resistance                              | 100 Megohms   |  |  |
| Recommended Setting Gap                            | 5mm [0.20 in]   |  |  |
| NC Switching Distance                              | Sao (assured ON) 8mm [0.31 in] close; Sar (assured OFF) 20mm [0.79 in] open                                 |  |  |
| NC Switching Operation                             | For all switches the NC circuits are closed when the guard is closed and the actuator is present.           |  |  |
| NO Switching Operation                             | Opens before NC circuits close  |  |  |
| Tolerance to Misalignment                          | 5mm [0.20 in] in any direction from 5mm [0.20 in] setting gap (See Misalignment Range drawing on this page) |  |  |
| Switching Frequency                                | 1.0 Hz Max.   |  |  |
| Approach Speed                                     | 200mm [7.87 in] per minute to 1000mm [39.37] per second   |  |  |
| Body Material - Polyester                          | CPR, LPR, MPR, SPR, WPR, BPR  | CPC, LPC, MPC, SPC, WPC                                | LPF, SPF, BPF                          |
| Body Material - 316 Stainless Steel                | CMR, CMR-F, LMR, SMR, SMR-F, BMR  | CMC, CMC-F, LMC, SMC, SMC-F                            | LMF, BMF                               |
| Operating Temperature Range                        | Polyester: -25° to +80°C (-13° to +176° F)  |  |  |
|  | 316 Stainless Steel: -25° to +105° C [-13° to +221° F]  | 316 Stainless Steel: -25° to +105° C [-13° to +221° F] | -25° to +80° C [-13° to +176° F]       |
| Storage Temperature (Low)                          | -55° to -40° C [-67° to -40° F]   |  |  |
| Enclosure Protection                               | IP67, IP69K (QC versions are IP67 due to connector)   |  |  |
| Shock Resistance                                   | IEC 68-2-27 11ms 30g  |  |  |
| Vibration Resistance                               | IEC 68-2-6 10-55 Hz 1mm [0.04 in]   |  |  |
| Cable Type   | PVC, 6.5 mm outside diameter max.   | PVC, 6.5 mm outside diameter max.                      | PVC, 6mm [0.24 in] outer diameter max. |
| Mounting Bolts (recommended)                       | 2 x M4; Tightening torque: 1.0 N•m [0.74 lb•ft]   |  |  |

Note: Always mount onto non-ferrous materials.



# Safety Products



*Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.*

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