Non Contact Coded Safety Switches

Operating Instructions

MPC (PLASTIC) **MMC** (METAL)



SPC (PLASTIC) **SMC** (METAL)



WPC (PLASTIC) **WMC** (METAL)



LPC (PLASTIC) **LMC** (METAL)



CPC (PLASTIC) **CMC** (METAL)



RPC (PLASTIC) **RMC** (METAL)



IMPORTANT NOTE:

Read and understand these instructions before installing, operating, or maintaining this equipment.
The product is designed to be a component of a customised safety orientated control system. It is the responsibility of each manufacturer to ensure the correct overall functionality of its systems and machines. IDEM, its subsidiaries and affiliates, are not in a position to guarantee all of the characteristics of a given system or product not designed by IDEM.

APPLICATION:

Coded Non Contact switches are designed to interlock hinged, sliding or removal guard doors. They are specifically advantageous when:

a) poor guard alignment exists
b) anti-tamper is required
c) high hygiene requirements exist e.g. food industry hose down
d) a long mechanical life is required (no moving or touching parts).

When used in combination with a Dual Channel Safety Relay, Coded Non Contact Switches can be used to provide protection up to Category 4 and Ple to ISO13849-1.

OPERATION:

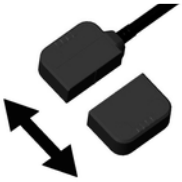
All Coded Non Contact Safety Switches are designed to conform to IEC 60947-5-3 and be used as directed by EN1088, EN ISO12100 and EN 60204-1. They have coded magnetic sensing which provides a wide (>10mm) sensing distance and provides a high tolerance to misalignment after sensing. They can be fitted behind stainless steel fittings and can operate in extreme environments of temperature and moisture.

INSTALLATION:

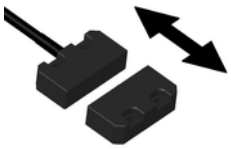
Installation of all Coded Non Contact Switches must be in accordance with a risk assessment for the individual application.
The use of a Safety Relay is required for monitoring Coded switches. These relays monitor 2 redundant circuits as per ISO13849-1 for up to Ple / Category 4 protection.
Coded Non Contact switches are designed to operate with most Dual Channel Safety Relays to satisfy IEC 60947-5-3 PDF-S.
M4 mounting bolts must be used to fix the switches. (Except RPC and RMC types.) RPC and RMC types require fitting through 30.5mm clearance holes. The lock nuts supplied must be used to secure the switches. Tightening torque for mounting bolts to ensure reliable fixing is 1.0 Nm. Always mount on to Non Ferrous materials. The recommended setting gap is 5mm.
The Safety switch must not be used as a mechanical stop or be adjusted by striking with a hammer. The actuator must not be allowed to strike the switch. Do not mount adjacent switches or actuators closer than 30mm.
Typical misalignment tolerance after setting is 5mm.
After installation always check each switch function by opening and closing each guard individually in turn and ensuring that the Green LED on the switch and the LED's on the Safety Relay are illuminated when the switch is closed and are extinguished when the switch is open. Check that the machine stops and cannot be re-started when each switch is open.
For MPC types, fit the protective screw covers after the final checks have been completed.

ACTUATOR OPENING DIRECTIONS:
Align actuator and switch using the target lines.

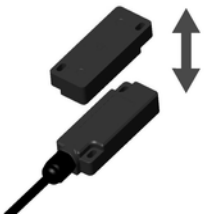
MPC MMC



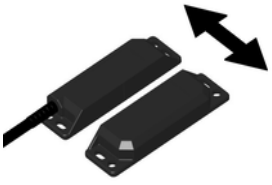
SPC SMC

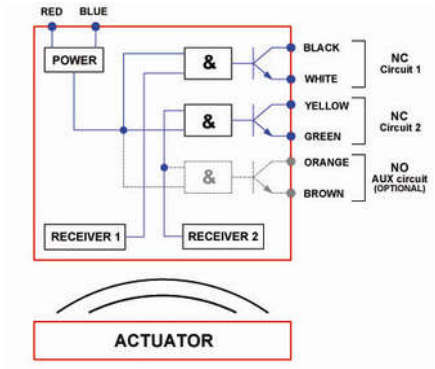


WPC WMC



LPC LMC





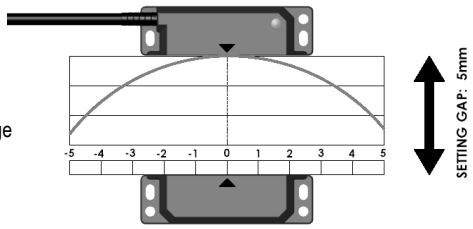
RPC RMC



CPC CMC



Misalignment range

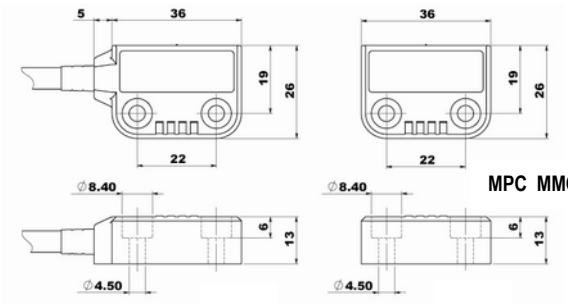


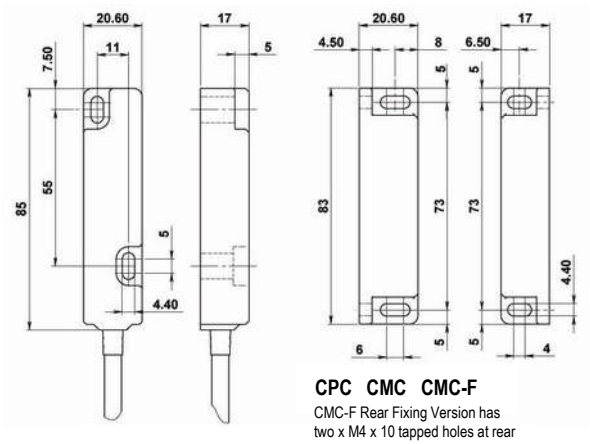
MAINTENANCE:

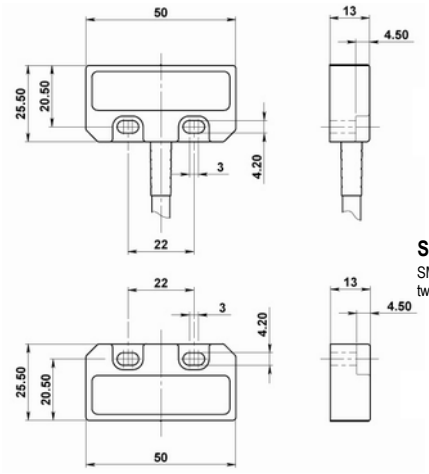
Monthly: Check alignment of actuator and look for signs of mechanical damage to the switch casing. Check wiring for signs of damage.

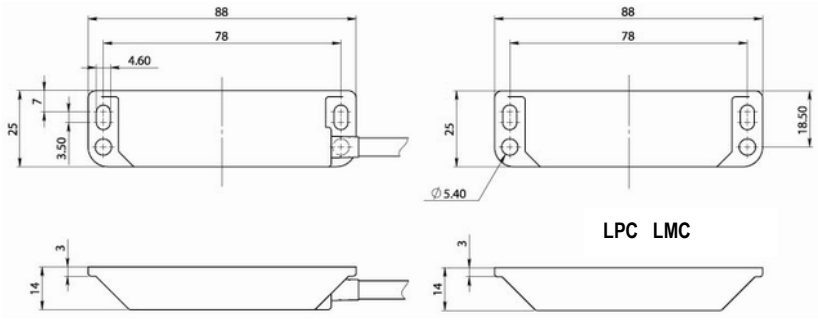
Check each switch function by opening and closing each guard individually in turn and ensuring that the Green LED on the switch and the appropriate LED's on the Safety Relay are illuminated when the switch is closed and are extinguished when the switch is open. Check that the machine stops and cannot be re-started when each switch is open.
Never repair any switch, actuator or integral cables. Replace any switch displaying signs of mechanical damage to the casing or cables.

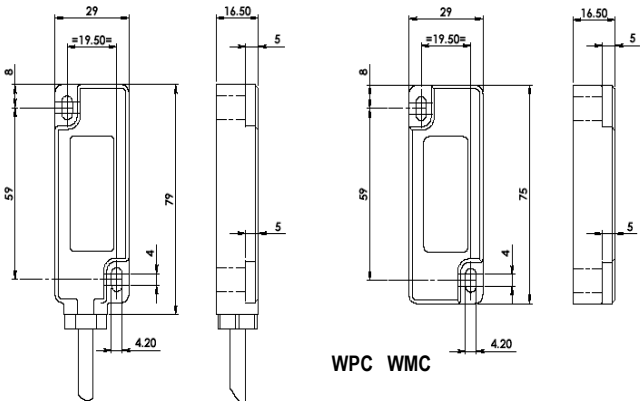
Non Contact Coded Safety Switches

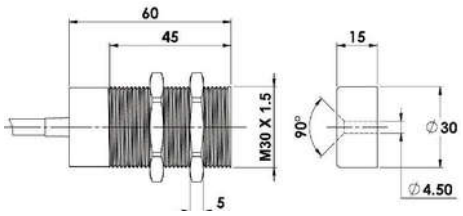




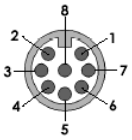




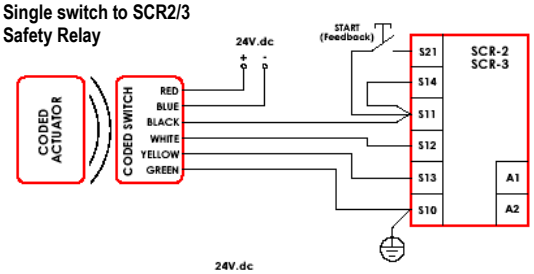


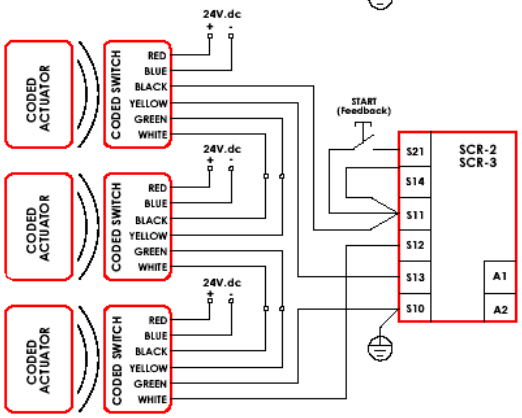


Quick Connect (QC) M12 8 way Male Plug (Pin view from switch)	Flying Lead Colours	Circuit (Actuator present)	Output Types Solid State
8	Orange	Auxiliary (NO)	200mA Max. 24Vdc
5	Brown	Auxiliary (NO)	
4	Yellow	NC 2 +ve	200mA Max. 24Vdc
6	Green	NC 2 -ve	
7	Black	NC 1 +ve	200mA Max. 24Vdc
1	White	NC 1 -ve	
2	Red	Supply +24Vdc	+ 10% -15%
3	Blue	Supply 0 Vdc	USE SELV / PELV



Single switch to SCR2/3 Safety Relay





Multiple switches in series to SCR2/3 Safety Relay

For all IDEM switches the NC circuits are closed when the guard is closed and the actuator present.

Information with regard to UL 508:
Type 1 Enclosures.
Control No: 48W5.
Max.Temp: 70ºC Plastic version.
90ºC Stainless Steel

Safety Classification and Reliability Data:

Switching Reliability	3.3 x 10^6 operations at 100mA load
EN 954-1	Up to Category 4 with Safety Relay
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	2.52 x 10^{-8}
Proof Test Interval (Life)	47 years
MTTFd	470 years
Standards:	EN1088 IEC 60947-5-3 EN 60204-1 ISO 13849-1 EN62061 UL508
Minimum switched current	10V. dc 1mA
Dielectric withstand	250V.ac
Insulation Resistance	100 Mohms
Recommended setting gap	5mm
Switching Distance	Sao 10mm Close (RMC 8mm Close) Sar 20mm Open (RMC 12mm Open)
Tolerance to misalignment	5mm in any direction from 5mm setting gap
Switching frequency	1.0 Hz maximum
Approach speed	200mm/m. to 1000mm/s.
Body Material	MPC SPC WMC LPC CPC RPC Polyester MMC SMC WMC LMC CMC RMC S/Steel 316
Temperature Range	–25/80C Polyester –25/105C S/Steel 316
Enclosure Protection	IP67 (Plastic) IP69K (S/Steel 316)
Shock Resistance	IEC 68-2-27 11ms 30g
Vibration Resistance	IEC 68-2-6 10-55 Hz. 1mm
Cable Type	PVC 6 or 8 core 6mm O.D.
Mounting Bolts	2 x M4 Tightening torque 1.0 Nm
Mounting Position	Any

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