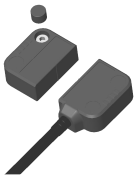
Non Contact Magnetic Safety Switches

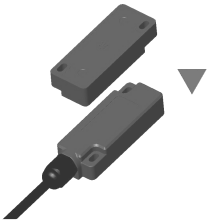
Operating Instructions

MPR (PLASTIC)
MMR-H (S/STEEL)



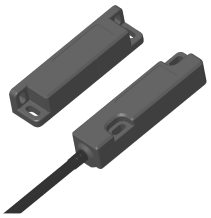
SPR (PLASTIC)
SMR (S/STEEL)
SMR-F (S/STEEL)
SMR-H (S/STEEL)

WPR (PLASTIC)
WMR (S/STEEL)

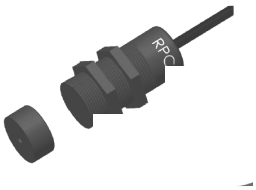


LPR (PLASTIC)
LMR (S/STEEL)

CPR (PLASTIC)
CMR (S/STEEL)



RPR (PLASTIC)
RMR (S/STEEL)



IMPORTANT NOTE:
Read and understand these instructions before installing, operating, or maintaining this equipment.
The product is designed to be a component of a customized safety oriented 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 removable guard doors. They are specifically advantageous when:

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

When used in combination with a Dual Channel Safety Relay or Control Device, Magnetic Non-Contact Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

OPERATION:
All Magnetic Non-Contact Safety Switches are designed to conform to EN60947-5-3 and be used as directed by ISO14119 and EN ISO12100. They have magnetic sensing which provides a wide sensing distance and provides a high tolerance to misalignment after sensing. They can operate in extreme environments of temperature and moisture.

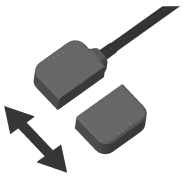
IMPORTANT:
The Risk Assessment for the particular application should include the risk of spare actuators. Spare actuators should not be readily available and must be securely controlled.
The safety functions and mechanics must be tested regularly. For applications were infrequent guard access is foreseeable, the system must have a manual function test to detect a possible accumulation of faults. At least once per month for PLe Cat3/4 or once per year for PLd Cat3 (ISO13849-1). Where possible it is recommended that the control system of the machine demands and monitors these tests, and stops or prevents the machine from starting if the test is not done. (See ISO14119).

INSTALLATION:
Installation of all Non Contact Switches must be in accordance with a risk assessment for the individual application.
Installation of the devices must be carried out by a competent person with appropriate experience of machine control integration

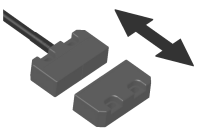
The use of a Safety Relay or Control Device is recommended for monitoring magnetic switches. These devices monitor 2 redundant circuits as per ISO13849-1 for up to PLe /Category 4 protection. M4 mounting bolts must be used to fix the switches. (Except RPR / RMR types, these types require fitting through 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.
IMPORTANT: The NC switch contacts are potential free and are internally fused. To protect the internal fuse, all switches must be externally fused at a lower rating (see Technical data).
After installation always check each switch function by opening and closing each guard individually in turn and ensuring that the LED's on the Safety Relay or Control Device 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 MPR types, fit the protective screw covers after the final checks have been completed.

ACTUATOR OPERATING DIRECTIONS FOR OPTIMUM PERFORMANCE:

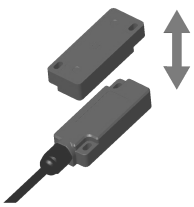
MPR MMR-H



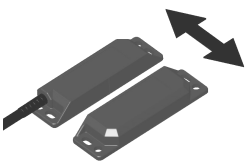
SPR SMR



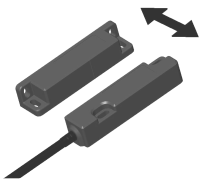
WPR WMR



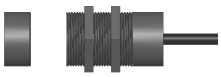
LPR LMR



CPR CMR



RPR RMR



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 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.

WARNING: DO NOT DEFEAT, TAMPER, OR BYPASS THE SAFETY FUNCTION. FAILURE TO DO SO CAN RESULT IN DEATH OR SERIOUS INJURY.

AVERTISSMENT: NE PAS DESACTIVER, MODIFIER, RETIRER, OU CONTOURNER CETI INTERVERROUILLAGE IL PEUT EN RESULTER DES BLESSURES GRAVES DU PERSONNEL UTILISATEUR.

Original Instructions.

To request this data sheet in other languages please contact info@idemsafety.com
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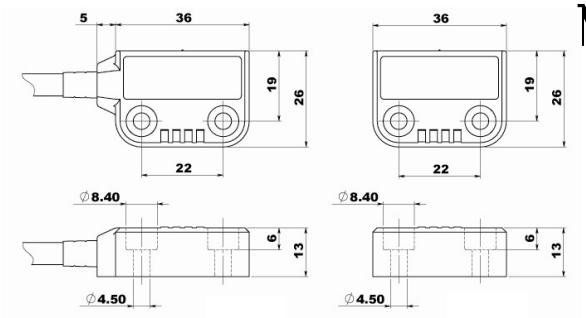
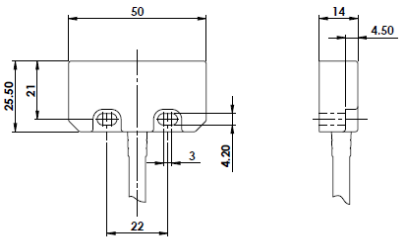


MPR MMR-H

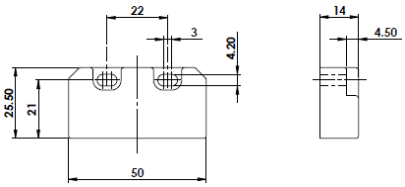
MMR-H version has two 5mm through holes. Hexagon head bolts can be used for ease of cleaning.

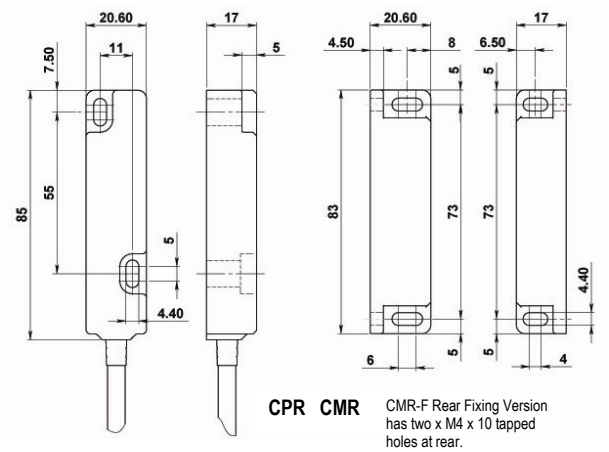


SPR SMR

SMC-F rear fixing version has two M4 x 10mm tapped holes at the rear of housings.

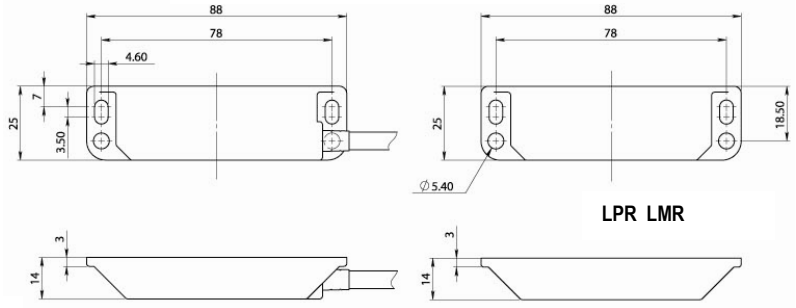
SMC-H version has two 5mm through holes. Hexagon head bolts can be used for ease of cleaning.



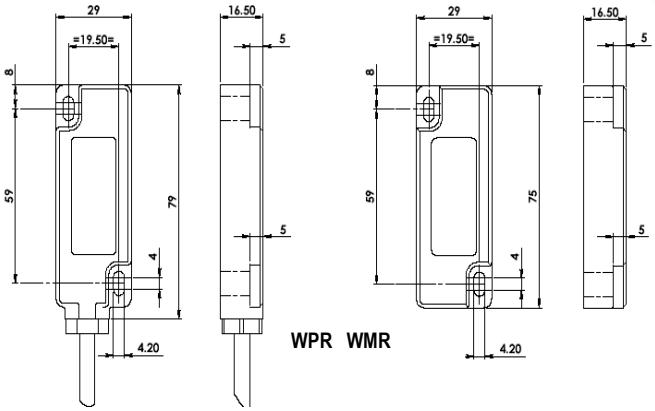


CPR CMR

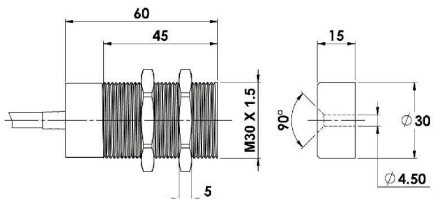
CMR-F Rear Fixing Version has two x M4 x 10 tapped holes at rear.



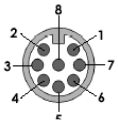
LPR LMR



WPR WMR

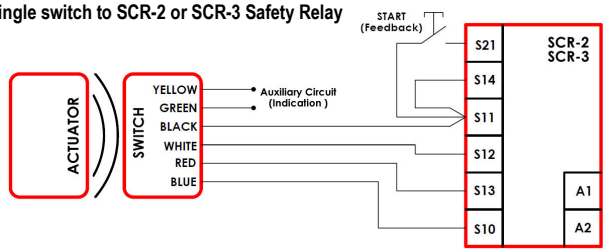


RPR RMR

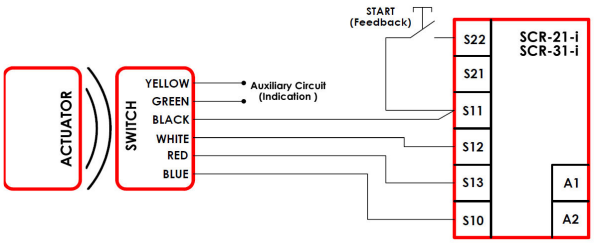
Quick Connect (QC) M12 8 way Male Plug (on Flying Lead 250mm) (Pin view from switch)		Flying Lead Colours	Circuit (Actuator present)
	4	Yellow	Auxiliary (NO)
	6	Green	Auxiliary (NO)
	7	Black	NC 2
	1	White	NC 2
	2	Red	NC 1
	3	Blue	NC 1

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

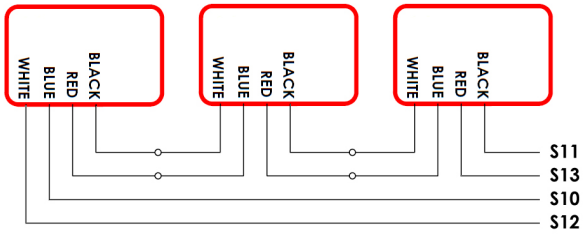
Single switch to SCR-2 or SCR-3 Safety Relay



Single switch to SCR-21-I or SCR-31-I Safety Relay (Viper range)



Connecting in series to SCR range



Safety Classification and Reliability Data:

ISO 13849-1	Up to PLe Category 4 (if both channels are used with a PLe control device)
PFHd	2.8 x 10^{-8} (1/h)
Proof Test Interval (Life)	20 years
B10d	3,300,000 cycles at 100mA load
Usage	8 cycles/hour 24 hours for 365 days per year

Technical Data:

Standards:	ISO14119 EN60947-5-3 EN60204-1 ISO13849-1 UL508
MPR MMR-H RPR RMR	240V.ac / 24V.ac/dc 0.5 A. max.
Safety Circuits NC	(Fuse externally 0.5A. (F).
SPR SMR LPR LMR CPR/CMR (2NC)	240V.ac / 24V.dc 1.0 A. max.
Safety Circuits NC	(Fuse externally 0.8A. (F).
WPR WMR CPR/CMR (1NC)	240V.ac / 24V.dc 2.0 A. max.
Safety Circuits NC	(Fuse externally 1.6A. (F).
Auxiliary Circuits NO	24V.ac/dc 0.2A. max.
Contact release time	<2ms
Initial contact resistance	<500 milliohm
Minimum switched current	10V. dc 1mA
Delectric withstand	250V.ac
Insulation Resistance	100 Mohms
Recommended setting gap	5mm
NC Switching Distance:	Sao 8mm
(Target to target)	Sar 20mm
NO Switching Distance	Opens before NC circuits close
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	MPR SPR CPR LPR WPR RPR Polyester
	SMR WMR CMR RMR MMR-H S/Steel 316
Temperature Range	-25/80C. 105C. S/Steel for CIP/SIP cleaning
Enclosure Protection	IP67 and IP69K (QC versions IP67 for connector)
Mounting Bolts	2 x M4 Tightening torque 1.0 Nm

Information with regard to UL 508:

Type 1 Enclosures. Maximum temperature: 80ºC Plastic versions, 90ºC S/Steel versions. Maximum output 24V.dc 200mA. Powered by Class 2 or equivalent.

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