



# Non-Contact RFID Coded Safety Switches

## MPZ Operating Instructions



### 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:

RFID Coded Non-Contact Safety Switches are designed to interlock hinged, sliding or removable guard doors. They are specifically advantageous when:

- high level anti-tamper is required
- high hygiene requirements exist e.g. food industry hose down
- long mechanical life is required (no moving or touching parts)

MPZ switches must be used in combination with a dual channel safety control device e.g. Safety Relay or Safety Controller.

MPZ switches can be used to provide protection to PLe/Cat.4 to ISO13849-1.

They will maintain PLe with switches connected in series due to internal test functions of the switches.

It is recommended to limit the number of switches connected in series to 30 maximum.

#### OPERATION:

All switches are designed to conform to EN60947-5-3 and be used as directed by ISO14119 and EN ISO12100. They have coded RFID sensing which provides a wide (>10mm) sensing distance and provides a high tolerance to misalignment after sensing. They can operate in extreme environments of temperature and moisture.

The switches are provided factory coded either uniquely (U types – Type 4 High Coding to ISO14119) or any code (A types – Type 4 Low Coding to ISO14119).

For U types the individual code numbers are shown on the reverse of switch / actuator. For A types any actuator will operate any switch.

#### IMPORTANT:

Record any RFID codes as required by factory rules or with reference to any risk assessment for the particular application.

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 where 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 Safety Switches must be in accordance with a risk assessment for the individual application.

The use of a Safety Relay or Safety Controller is required for monitoring MPZ switches.

These devices monitor 2 redundant circuits as per ISO13849-1 for up to PLe / Category 4 protection.

Tightening torque for mounting bolts to ensure reliable fixing is 1.0 Nm.

Always mount on Non Ferrous materials.

After testing cover the mounting bolt holes with the cover caps provided.

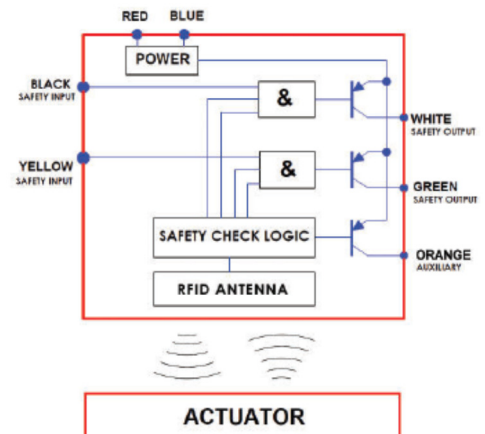
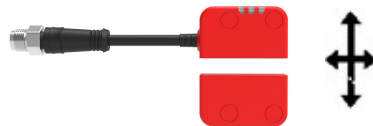
The recommended setting gap is 3mm. The Safety Switch must not be used as a mechanical stop or be adjusted by striking with a hammer.

The actuator must not be allowed to strike the switch. Do not mount adjacent switches or actuators closer than 100mm.

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 appropriate LEDs on the Safety Relay or Controller 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.

#### ACTUATOR OPERATING DIRECTIONS:



#### 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 or Controller 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.

**These requirements form part of the product warranty.**



#### WARNING:

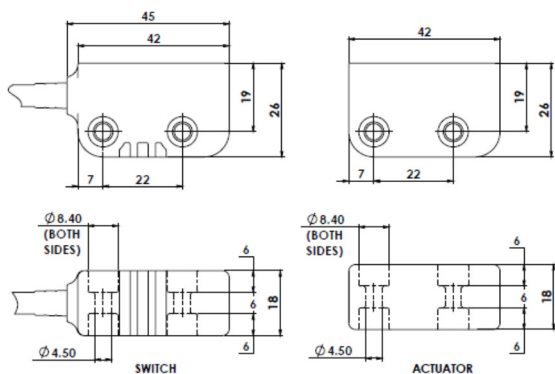
**DO NOT DEFEAT, TAMPER, OR BYPASS THE SAFETY FUNCTION. FAILURE TO DO SO CAN RESULT IN DEATH OR SERIOUS INJURY**

#### AVERTISSEMENT:

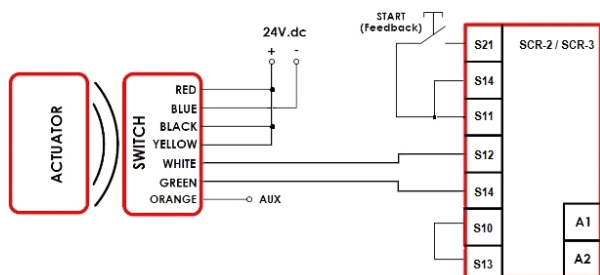
**NE PAS DESACTIVER, MODIFIER, RETIRER, OU CONTOURNER CETI INTERVERROUILLAGE IL PEUT EN RESULTER DES BLESSURES GRAVES DU PERSONNEL UTILISATEUR.**

# Non-Contact RFID Coded Safety Switches

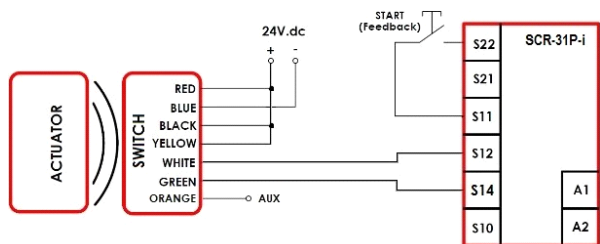
## Switch Dimensions (mm)



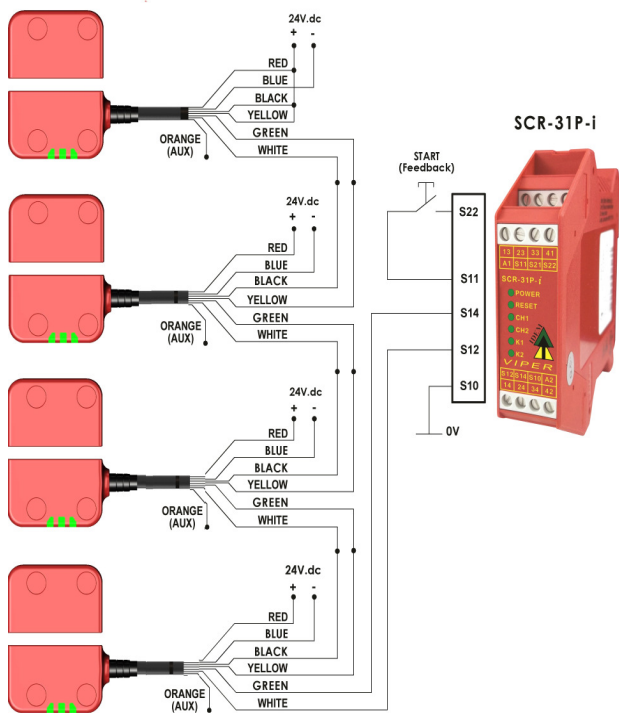
## Single switch to SCR-2 or SCR-3 Safety Relay:



## Single switch to SCR-31P-i Safety Relay (Viper series):



## Multiple switches to SCR-31P-i Safety Relay (Viper series):



## ORIGINAL INSTRUCTIONS

To request this data sheet in other languages please contact [info@idemsafety.com](mailto:info@idemsafety.com)

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 IDEM SAFETY SWITCHES USA, Inc. 2574 S.Beverly St., Suite 104, Boise, ID 83709 Tel: 510-445-0751 Fax: 866-431-7064 email: [salesusa@idemsafety.com](mailto:salesusa@idemsafety.com)

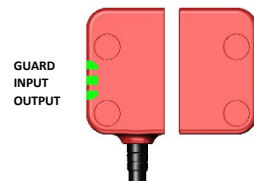
email: [sales@idemsafety.com](mailto:sales@idemsafety.com)  
 Web: [www.idemsafety.com](http://www.idemsafety.com)

## LED Diagnostics

GUARD LED:	
Guard Closed	Green (Steady)
Code Incorrect	Red (Flash)
Guard Open	Red (Steady)

INPUT LED:	
Safety Inputs On	Green (Steady)
Safety Input Missing	Green (Flash)
Safety Inputs Off	Off
Internal Fault	Red (Steady)

OUTPUT LED:	
Safety Outputs On	Green (Steady)
Safety Outputs Missing	Green (Flash)
External Fault	Red (Flash)



M12 QC 8-way Male Plug on 250mm Flying Lead (Pin view from switch)	Flying Lead Colours	Circuit
8	Orange	Auxiliary Signal Output (+24 Vdc)
5	Brown	Not used
4	Yellow	Safety Input 1
6	Green	Safety Output 1
7	Black	Safety Input 2
1	White	Safety Output 2
2	Red	Supply +24 Vdc
3	Blue	Supply 0 Vdc

## Standards:

ISO14119 EN 60947-5-3 EN 60204-1 ISO 13849-1 EN 62061 UL508

## Technical Data:

Rated Operating Voltage	24 Vdc -15% +10%	Use SELV/PELV
Power Consumption	0.7W	
Outputs Rated Voltage	24 Vdc	
Outputs Max. Current	0.1 A	
Outputs Min. Current	1 mA	
Outputs Type	OSSD, PNP	
Inputs Rated Voltage	24 Vdc	
Inputs Rated Current	2 mA	
Auxiliary Signalling Output Rated Voltage	24 Vdc	
Auxiliary Signalling Output Max. Current	0.2 A	
Signalling Output Type	PNP	
Assured Switching Distances	SAO: 10mm SAR: 25mm	
Recommended Setting Gap	3mm	
Tolerance to Misalignment	+/-5mm in any direction from 5mm setting gap.	
Response Time Guard Open	60ms max.	
Response Time Inputs Off	20ms max.	
Operating Temperature	-25 / 55C	
Storage Temperature	-25 / 80C	
Dielectric Withstand	250V.ac	
Insulation Resistance	100 Mohms	
Enclosure Protection	IP67 (IP69K cable versions)	
Body material	MPZ Polyester	

## Characteristic Data according to IEC62061 (used as a sub system)

Safety Integrity Level	SIL3	
PFH (1/h)	1.0 E-09	Corresponds to 1% of SIL3
PFD	8.8 E-05	Corresponds to 9% of SIL3
Proof Test Interval T <sub>1</sub>	20a	

## Characteristic Data according to EN ISO13849-1

Performance Level	e	
Category	4	
MTTF <sub>d</sub>	771a	
Diagnostic Coverage DC	High	

Information for U.L. Standards: Type 1 Enclosures. Maximum temperature 50°C. Maximum output 24V.d.c 100mA. Powered by Class 2 or equivalent.

## Sales Part Numbers

417002	MPZ (A - any code)	5m. cable	2 x OSSD + Aux.
417003	MPZ (A - any code)	10m. cable	2 x OSSD + Aux.
417004	MPZ (A - any code)	QC-M12 8 way Male on 250mm Flying Lead	2 x OSSD + Aux.
417201		Replacement Actuator (A - anycode)	
417102	MPZ (U - unique Code)	5m. cable	2 x OSSD + Aux.
417103	MPZ (U - unique Code)	10m. cable	2 x OSSD + Aux.
417104	MPZ (U - unique Code)	QC-M12 8 way Male on 250mm Flying Lead	2 x OSSD + Aux.