



Non-Contact RFID Coded Safety Switches

SP-RFID and LP-RFID Operating Instructions



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:

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

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

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

Operation:

All RFID Coded Non-Contact Safety Switches are designed to conform to EN60947-5-3 and be used as directed by EN1088, EN ISO12100 and EN 60204-1. They have coded RFID and magnetic 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 or by series master code. Code numbers are shown on the reverse of switch / actuator.

Important:

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

Installation:

Installation of all RFID Coded Non-Contact Safety Switches must be in accordance with a risk assessment for the individual application.

The use of a Safety Relay is required for monitoring RFID Coded switches. These relays monitor 2 redundant circuits as per ISO13849-1 for up to PLe / Category 4 protection.

RFID Coded Non-Contact Safety Switches are designed to operate with most Dual Channel Safety Relays to satisfy EN 60947-5-3 PDF-S.

M4 mounting bolts must be used to fix 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.

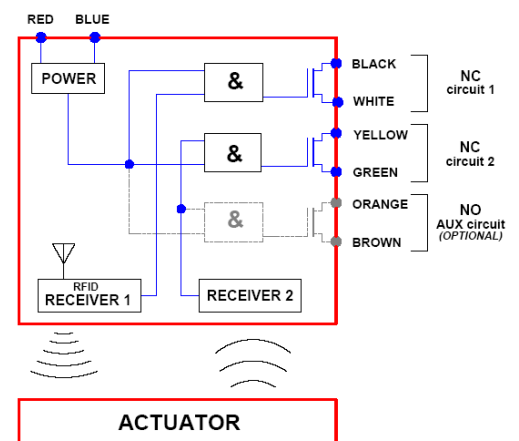
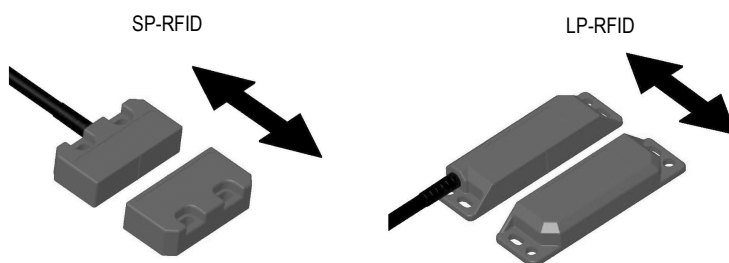
The actuator must not be allowed to strike the switch. Do not mount adjacent switches or actuators closer than 30mm.

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 LEDs 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.

Actuator Operating Directions for optimum performance:

Align actuator and switch using the target lines



Diagnostics:

LED Green 'on' = NC1 and NC2 closed.

LED Green 'Flashing' = alignment problem. Open/close guard and re-check.

Maintenance:

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

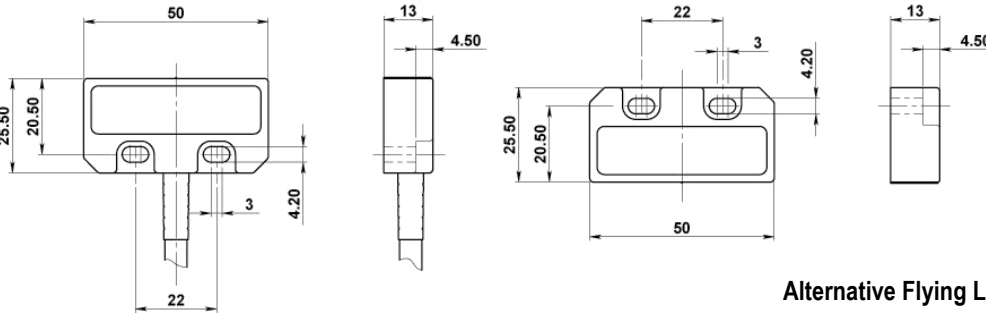
Monthly: Check each switch function by opening and closing each guard individually in turn and ensuring that the Green LED on the switch and the appropriate LEDs on the Safety Relay are illuminated when the switch is closed and are extinguished when the switch is open. Check that the machine stops and 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.

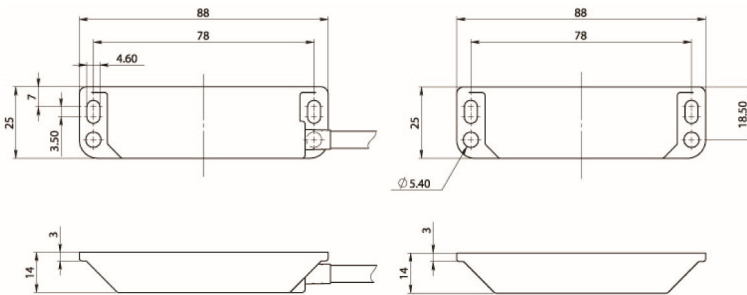
Non-Contact RFID Coded Safety Switches

Switch Dimensions (mm)

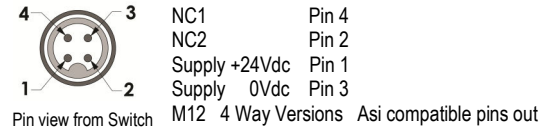
SP-RFID Housing and Actuator



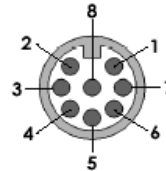
LP-RFID Housing and Actuator



Alternative Flying Lead Connection – M12 4-Way

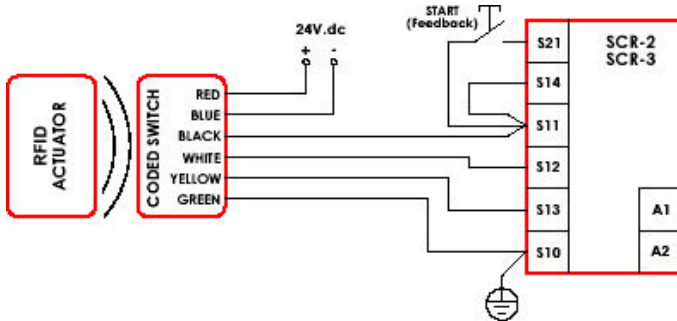


Standard Flying Lead Connection – M12 8-Way

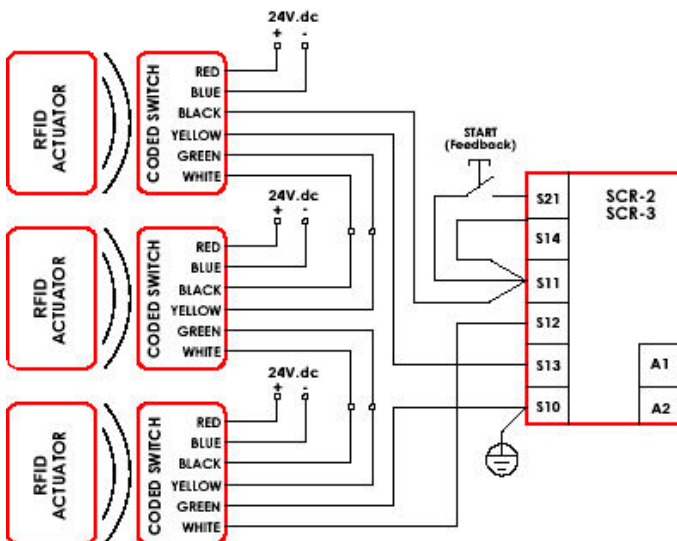


Connection Colours

Single Head up to PL_e / Cat.4 (ISO13849-1)



Multiple Heads up to PL_d / Cat.3 (ISO13849-1)



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)	200mA Max. 24Vdc
4	Yellow	NC 2	200mA Max. 24Vdc
6	Green	NC 2	200mA Max. 24Vdc
7	Black	NC 1	200mA Max. 24Vdc
1	White	NC 1	200mA Max. 24Vdc
2	Red	Supply +24Vdc	+/- 10%
3	Blue	Supply 0 Vdc	+/- 10%

Standards:	
EN1088 EN 60947-5-3 EN 60204-1 ISO 13849-1 EN 62061 EN 954-1 UL508	
Safety Classifications and Reliability Data:	
Minimum switched current:	10V _{dc} 1mA
Dielectric Withstand:	250V _{ac}
Insulation Resistance:	100 Mohms
Recommended setting gap:	5mm
Switching Distance:	Sao 10mm Close Sar 20mm 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:	Polyester
Temperature Range:	-25/80C
Enclosure Protection:	IP67
Cable Type:	PVC 6 or 8 core 6mm O.D.
Mounting Bolts:	2 x M4 Tightening torque 1.0 Nm
Mounting Position:	Any

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

Safety Integrity Level	SIL3	
PFH (1/h)	4.77E-10	Corresponds to 4.8% of SIL3
PDF	4.18E-05	Corresponds to 4.2% of SIL3
Proof Test Interval T ₁	20a	

Characteristic Data according to EN ISO13849-1

Performance Level	e	If both channels are used in combination with a SIL3/PL _e control device
Category	Cat4	
MTTF _d	1100a	
Diagnostic Coverage DC	99% (high)	

Number of operating days per year: $d_{op} = 365d$
 Number of operating hours per day: $h_{op} = 24h$
 B10_a not mechanical parts implemented
 When the product is used deviant from these assumptions (different load, operating frequency, etc.) the values have to be adjusted accordingly.