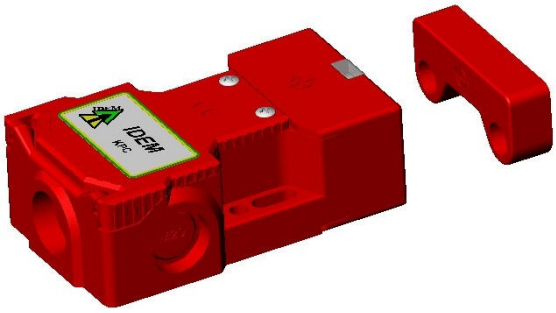
Non Contact Coded Safety Switches
KPC (Kobracode) Operating Instructions

CODED MAGNETIC ACTUATION
SWITCHING TOLERANCE UP TO 12mm
FRONT OR END ACTUATION
WILL OPERATE WITH MOST SAFETY RELAYS
PLASTIC HOUSING



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 the user 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:

IDEM's KPC Coded Non Contact Safety Switch has been 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 Cat 4/Ple to ISO13849-1.

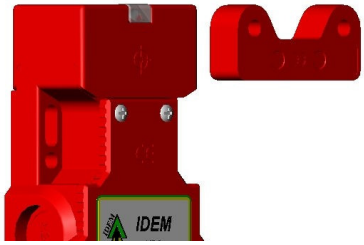
Operation:

The KPC Coded Non Contact Safety Switch is designed to conform to EN 60947-5-3 and be used as directed by ISO14119. The KPC has coded magnetic sensing which provides a wide up to 12mm) 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.

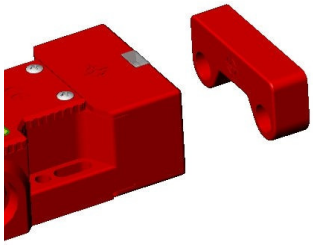
Installation:

Installation of the KPC Coded Non Contact Switch must be in accordance with a risk assessment for the individual application.
The use of a Safety Relay is required for monitoring IDEM Coded switches. These relays monitor 2 redundant circuits as per ISO 13849-1 for up to Cat 4/Ple protection.
IDEM's KPC Coded Non Contact Switch is designed to operate with most Dual Channel Safety Modules to satisfy EN 60947-5-3.
M5 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 1.5 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. The 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 Modules 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.
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).

Actuator Operating Directions:



FRONT ACTUATION

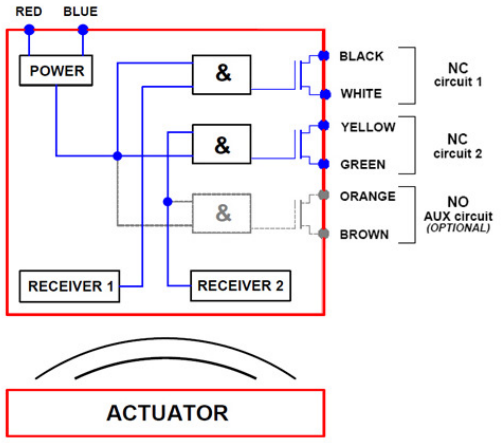


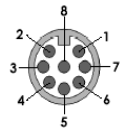
END ACTUATION

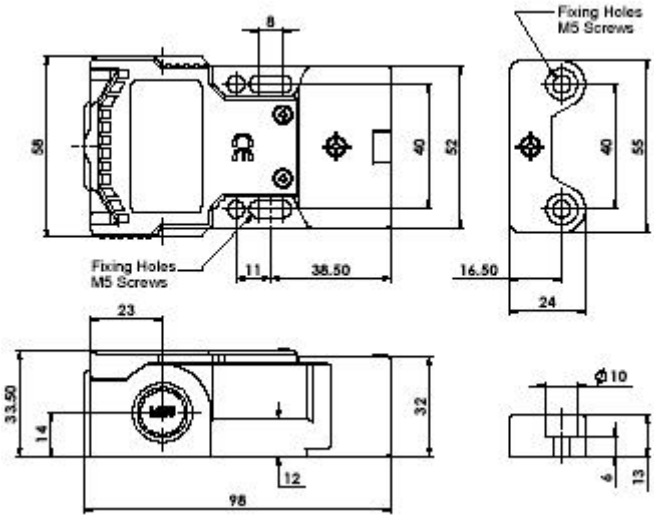
Maintenance:

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.

Non Contact Coded Safety Switches



Quick Connect (QC) M12 8 way Male Plug (on Flying Lead 250mm) (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	200mA Max. 24Vdc
	6	Green	NC 2	
	7	Black	NC 1	200mA Max. 24Vdc
	1	White	NC 1	
	2	Red	Supply +24Vdc	+/- 10%
	3	Blue	Supply 0Vdc	USE SELV / PELV



Safety Classification and Reliability Data:

ISO 13849-1	Up to PLe Category 4 (if both channels are used with a PLe control device)
PFHd	2.6 x 10^{-10} (1/h)
Proof Test Interval (Life)	20 years
MTTFd	866 years

Technical Data:

Standards:	ISO14119 EN60947-5-3 EN60204-1 ISO13849-1 UL508
Power consumption	25mA max.
Maximum switched current (outputs)	200mA (minimum internal resistance 8.5ohms)
Dielectric withstand	250V.ac
Insulation Resistance	100 Mohms
Switching distance	Sao 8mm Sar 20mm
Recommended setting gap	5mm
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	Plastic (Polyester) or S/Steel 316
Temperature Range	-25/80C Plastic 105C S/Steel for CIP/SIP cleaning
Enclosure Protection	IP67 and IP69K (QC versions IP67 for connector)
Shock Resistance	IEC 68-2-27 11ms 30g
Vibration Resistance	IEC 68-2-6 10-55 Hz. 1mm
Cable Type	PVC 6mm O.D. Conductors 0.25 sq.mm.
Mounting Bolts	2 x M4 Tightening torque 1.0 Nm
Mounting Position	Any

Information with regard to UL 508:
Type 1 Enclosures. Maximum temperature: 50ºC.
Maximum output 24V.dc 100mA. Powered by Class 2 or equivalent.

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.

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