



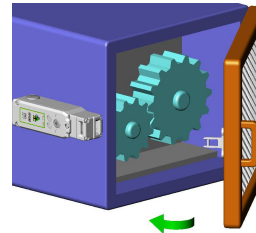
Version with REQUEST button
(Momentary Push Button with
1 set of changeover contacts
in Lid Assembly)



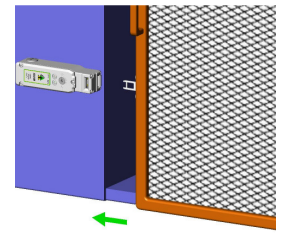
Stainless Steel 316

Safety Interlock Switch with Guard Locking

KL4-SS Operating Instructions



Hinged Guard



Sliding Guard

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 and Operation:

The KL4-SS Safety Interlock Switch with Guard Locking is designed to fit to the leading edge of sliding or hinged guard doors to provide positively operated switching contacts and provide a tamper resistant key mechanism. The KL4-SS is designed to provide robust position interlock detection and holding closed of moving guards. The switch is rigidly mounted to the frame of the guard or machine. The actuator is fitted to the moving part (frame) of the guard and is aligned to the switch entry aperture. The actuator profile is designed to match a cam mechanism within the switch head and provides a positively operated not easily defeatable interlock switch. When the guard is closed and the actuator is inserted into the switch the safety contacts close, the actuator is locked and the machine start circuit can be enabled. When the solenoid is energised the safety contacts are positively opened, the machine stop circuit is broken and the guard door can be opened.

Installation:

- Installation of all interlock switches must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.
- M5 mounting bolts must be used to fix the switch and actuator, the tightening torque to ensure reliable fixing is 4.0 Nm. **To prevent loosening of the switch after installation, always fix the M5 mounting bolts with a thread-locking compound or secure using self locking nuts.**
Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1.5 Nm to ensure IP seal. Only use the correct size gland for the conduit entry and cable outside diameter.
Tightening torque for the connection terminal screws is 0.7 Nm, max conductor size is 1.0 sq.mm.
The switch head position can be selected by removing the actuator, loosening the 4 head bolts and then rotating the head to the position required. Re-tighten the head bolts and then check actuator insertion and withdrawal.
Tightening torque for the head bolts is 1.5Nm.
The switch is supplied with removable conductor links fitted 41/42 and 31/32. If required by the control circuit these may be removed to offer independent monitoring of the solenoid locking function or the actuator.
- Always fit a mechanical stop to the guard to prevent damage to the front of the switch.
Set the actuator gap to 3mm when the guard is closed and against the stop. (See Fig. A.)
Use alignment guides to ensure that the actuator enters the switch without interfering with the sides of the aperture. Ensure access to at least one of the manual release points.
Always fit the aperture plug to the unused entry aperture to prevent debris entering the mechanism.
- After installation check operation of all control circuits and the locking function.
For applications with a run down time after removing power, ensure that the correct timing allowance has been before energising the solenoid.
LED 1 RED will illuminate when power is applied to A1 and A2 (solenoid feed).
LED 2 GREEN (if used) will be illuminated when the actuator is locked.

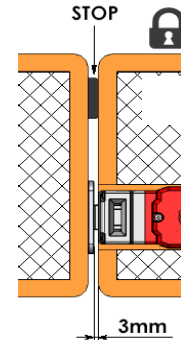
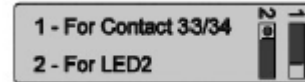


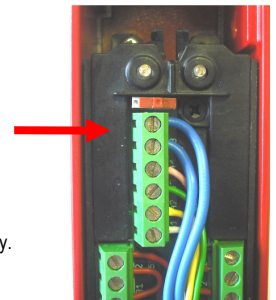
Fig. A

5. IMPORTANT!

At installation choose the status of Terminals 33 and 34 by setting the slide switch inside the switch housing.



If LED2 is used always check for correct .dc polarity.
Terminal 33: 0V.dc Terminal 34: +24V.dc



Top or Side
Manual release points



8 actuator entry positions
rotatable head



Manual Release Key
Part No. 140123

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.

Application consideration must be given to the fixing of the actuator which has to be in a way that prevents disassembly by easy means. If fitted, it should not be possible to operate the manual escape release from outside of the safeguarded area. Measures should be taken to reduce the risk of improper activation.

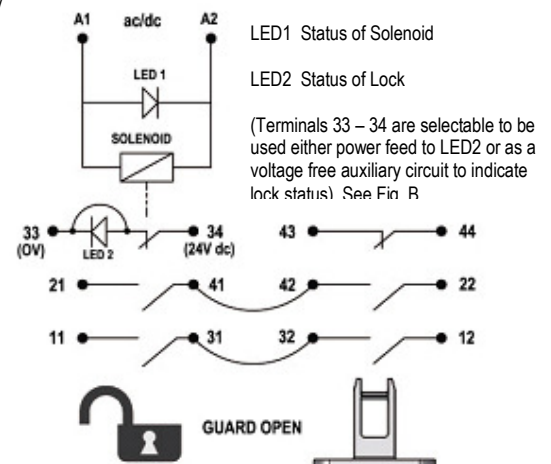
Ensure that the switch holding force (Fzh) is sufficient to withstand the static forces applied during normal use and dynamic effects caused by bouncing of the guard shall not create an impact reaction force which exceeds the holding force. If the expected impact reaction forces are higher than the specified holding force for the switch, then design measures must be applied to avoid the force.

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).

Maintenance:

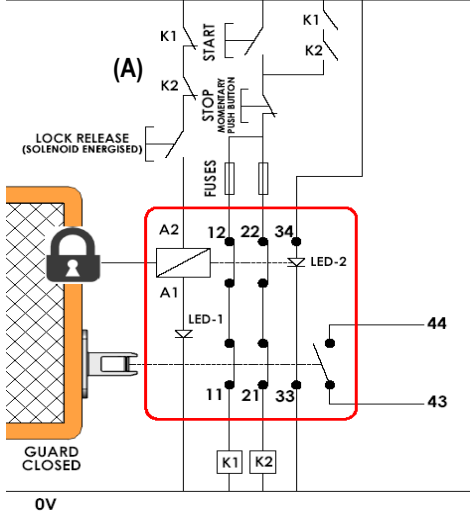
- Every Month: Check the switch actuator and body for signs of mechanical damage and wear. Replace any switch showing damage.
- Every 6 Months: Check for mechanical damage to switch body or actuator. Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch. Replace any switch displaying damage. **These requirements form part of the product warranty.**



The connections between terminals 31/32 and 41/42 are made using wire links inside the switch (factory fitted). These links are able to be removed at installation to allow individual monitoring of the lock status and tongue status.

Safety Interlock Switch with Guard Locking

24V dc



Application Example: Door Interlock with Guard locking - Dual Channel (non-monitored).

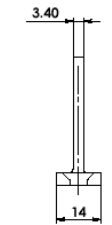
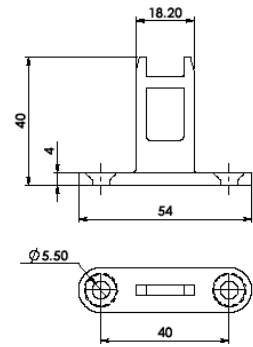
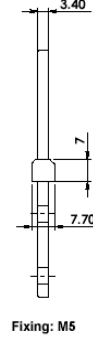
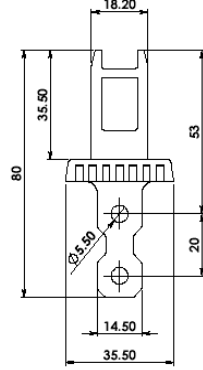
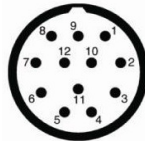
The guard is locked closed until the solenoid is energized. The solenoid can only be energized when the auxiliary contacts (A) of contactors K1 and K2 are closed. When the lock release button is pushed the locking mechanism is released and the switch contacts 11-12 and 21-22 are opened. These contacts are in series with contactor coils of K1 and K2 and will prevent re-start whilst the guard is open. If after pressing the Stop button either contactor K1 or K2 stays closed the machine will stop but the solenoid cannot be energized or the guard opened.

LED 1 provides visual indication of solenoid power applied.

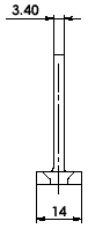
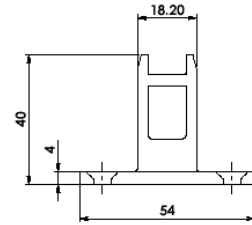
LED 2 provides visual indication of guard locked and machine able to start.

System is shown with machine stopped, guard closed and locked, and the solenoid able to be energised (Lock released).

Quick Connect (QC) M23 12 way Male Plug (Pin view from switch)	Switch Circuit
1 3	A1 A2
4 6	11 / 12
7 8	21 / 22
2 5	43 / 44
9	33
10	34
Earth	12



Fixing: M5 CSK



Fixing: M5 CSK

Conforming to Standard: ISO14119, IEC60947-5-1, EN62024-1, ISO13849-1, EN62061, UL508

Safety Classification and Reliability Data:

Mechanical Reliability B10d
ISO13849-1
EN62061

2.5 x 10⁶ operations at 100mA load
up to PLe depending upon system architecture
up to SIL3 depending upon system architecture
8 cycles per hour / 24 hours per day / 365 days
MTTFd 356 years

Safety Data – Annual Usage

Solenoid Voltage (by part number) 24V ac/dc or 110V ac or 230V ac

Solenoid Wattage 12W

LED 2 Supply Voltage 24V dc

Utilization Category AC15 A300 3A

Thermal Current (Ith) 5A

Rated Insulation/Withstand Voltages 600VAC/2500VAC

Travel for Positive Opening 10mm

Actuator Entry Minimum Radius 175mm Standard 100 Heavy Duty

Maximum Approach/Withdrawal Speed 600mm/s

Body Material Stainless Steel 316

Enclosure Protection IP69K/IP67

Operating Temperature -25C to 55C

Vibration IEC 68-2-6, 10-55Hz+1Hz

Excursion: 0.35mm, 1 octave/min

Conduit Entry Various (see Sales Part Numbers)

Fixing 4 x M5

Actuator insertion (mm)

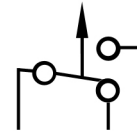
6.0 5.0 0mm

11/12	Open	
21/22	Open	
33/34		Open
43/44		Open

REQUEST BUTTON VERSION: (MOMENTARY ACTION)

Note:

Pins 9 and 10 can be internally re-wired for use with circuit 43/44.



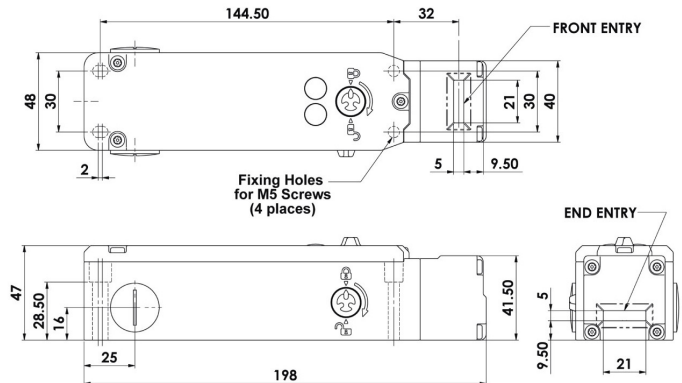
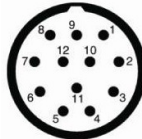
Wire colours (NC/NO):

Black = common

Brown = NC

Blue = NO

Quick Connect (QC) M23 12 way Male Plug (Pin view from switch)	Switch Circuit
1 3	A1 A2
4 6	11/12
7 8	21/22
2	Request button (Common) (Black wire)
5	Request button (NO) (Blue wire)
9	33
10	34
11	Request button (NC) (Brown wire)
12	Earth



Original Instructions.

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