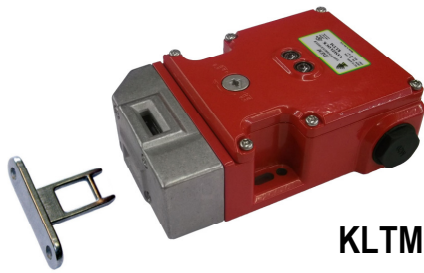
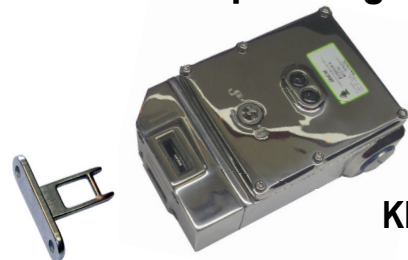




Tongue Switch with Guard Locking KLTM & KLT-SS Operating Instructions



KLTM



KLT-SS

Application:

The RAMZLOCK KLTM and KLT-SS Safety Interlock switch is designed to fit to the leading edge of machine guard doors to provide robust guard locking. They are designed to provide robust position interlock detection for moving guards and will remain locked until the solenoid voltage is applied to the switch. They can be used in conjunction with delay timers to provide the solenoid energisation only after a pre-determined time has run down.

Operation:

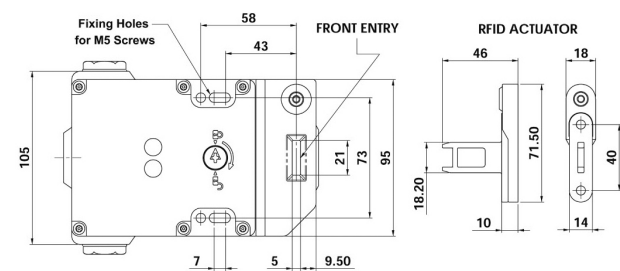
The switch is rigidly mounted to the fixed frame of the guard or machine. The actuator is fitted to the moving part (frame) of the guard and is aligned to the switch entry aperture. The mechanical tongue actuator profile is designed to match a cam mechanism within the switch head and provides a positively operated not easily defeatable mechanical interlock. Only when the actuator is correctly aligned can the safety contacts close and allow the machine start circuit to be enabled. When the solenoid is energised the safety contacts are positively opened and the machine circuit is broken. 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.

Installation:

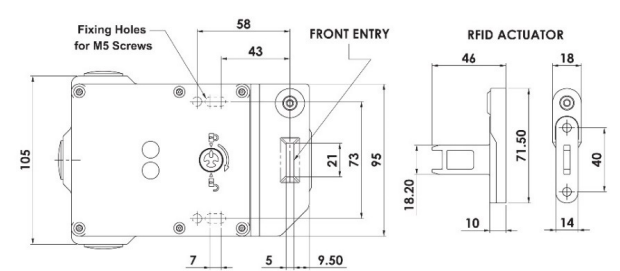
1. Installation of all IDEM interlock switches must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.
2. M5 (or appropriate) mounting bolts must be used to fix the switch and actuator mounting plates. The tightening torque to ensure reliable fixing is 4.0 Nm. Tightening torque for the lid screws and cable glands must be 1.5 Nm to ensure the IP seal.
3. 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.
4. Always fit a mechanical stop to the guard to prevent damage to the front of the switch. Use alignment guides to ensure that the actuator enters the switch without interfering with the sides of the switch aperture. Ensure access to at least one of the manual release points (if fitted). Always fit the aperture plug to the unused entry aperture to prevent debris entering the switch mechanism.
5. 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 made before the solenoid is energised.
6. **IMPORTANT:** At installation choose the status of Contacts 33 and 34 by setting the slide switch inside the switch housing.

1	
2	

 If LED2 is used always check for correct .dc polarity.
 Contact 33: 0V.dc Contact 34: +24V.dc
7. **IMPORTANT:** The safety functions and mechanics must be tested regularly. For application 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 Cat 3/4 or once per year for PLd Cat 3 (ISO13849-1). Where possible it is recommended that the control system of the machine demands and monitors these tests, and stop or prevents the machine from starting if the test is not done. It is the responsibility of the user to ensure the correct overall functionality of its systems and machines.



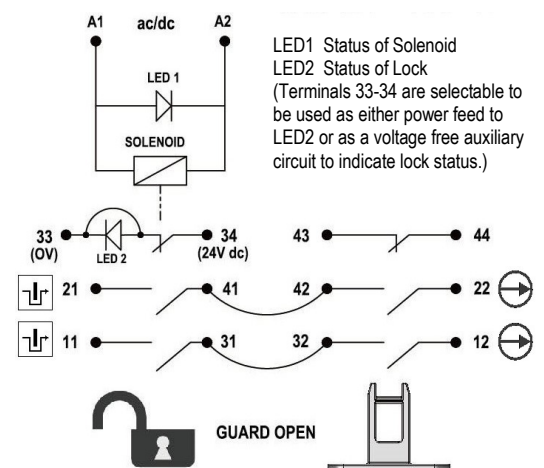
KLTM



KLT-SS

LED Functions:

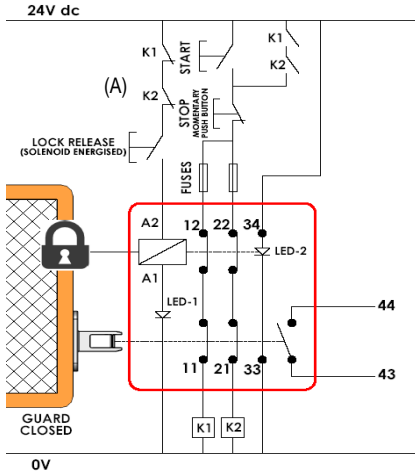
LED1	Red	Solenoid Energised
LED2 (if used)	Green	Guard Locked



Tongue Switch with Guard Locking

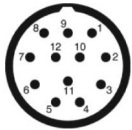
Maintenance:

- 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.**

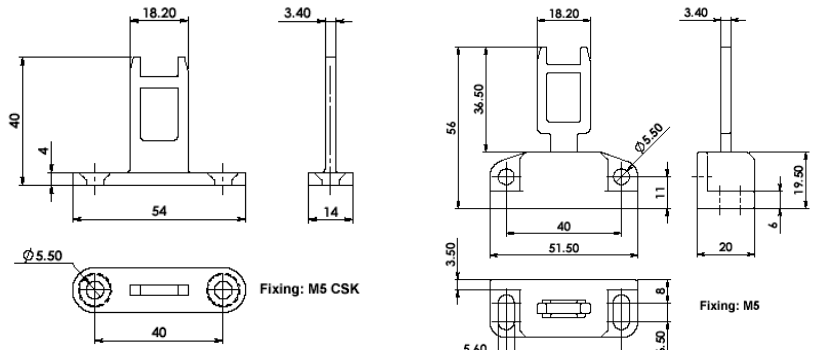


Application Example: Door Interlock with Guard locking - Dual Channel (non-monitored).

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
12	Earth

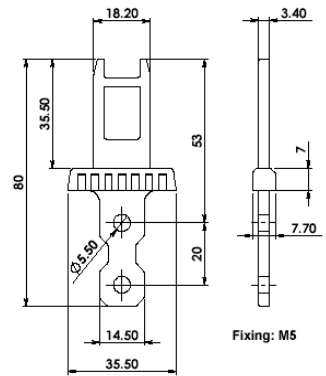


Actuator insertion

	6.0	5.0	0 mm
11/12	Open		
21/22	Open		
33/34			Open
43/44			Open

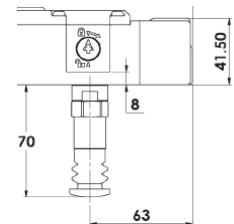
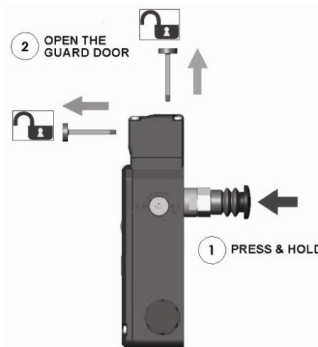
Information with regard to UL Standards:

Type 1 enclosure. Maximum temperature 40°C. Use 16-28AWG stranded copper conductors (rated 90°C). Terminal Torque 6 lb ins. (0.7Nm). Intended for same polarity use. A300 Pilot Duty. 240V. 3A. PF 0.38 or greater, tested for 6,000 cycles endurance. Use one polymeric conduit connection. Not suitable for connection to rigid metal conduit. (Earth bonding terminal inside enclosure if required).



- Conforming to Standard:** ISO14119, IEC60947-5-1, UL60947-5-1, ISO13849-1
- Safety Classification and Reliability Data:**
- Mechanical Reliability B10d 2.5 x 10⁶ operations at 100mA load up to PL_e / Cat.4 depending upon system architecture
 - ISO 13849-1 up to SIL3 depending upon system architecture
 - EN 62061 8 cycles per hour / 24 hours per day / 365 days
 - Safety Data - Annual Usage PFHd 3.44 x 10⁻⁸
 - Proof Test Interval (Life) 35 years
 - MTTFd 356 years
 - Solenoid Voltage (by part number) 24V ac/dc or 110V. ac or 230V. ac +/- 10% (12W.)
 - LED 2 Supply Voltage 24V dc +/- 10%
 - Safety Contacts 11/12 21/22 Utilization Category AC15 A300 3A. Thermal Current (Ith) 5A
 - 10A. (FF).
 - Overload protection fuse (fuse externally) 24V.ac/dc 0.5A. maximum.
 - Auxiliary Contact 33/34 (selectable with LED2) 230V.ac/dc 0.5A. maximum.
 - Auxiliary Contact 43/44 600VAC
 - Rated Insulation Voltage 2500VAC
 - Rated Impulse Withstand Volt 10mm
 - Travel for Positive Opening 200mm/m. to 1000mm/s.
 - Approach Speed 2 cycle/sec
 - Man. Actuation Frequency 175mm Standard 100mm Flexible
 - Actuator entry minimum radius Case Material Die cast metal
 - Head Material Stainless Steel 316
 - Actuator Material Stainless steel 316
 - Enclosure Protection IP67
 - Operating Temperature -25°C to 40°C
 - Holding Force F1Max: 3000N. Fzh: 2307N.
 - 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

Where the Risk Assessment for the application permits, a non latching escape rear release versions (-RR) enables quick release of the switch lock in case of emergency. The switch can be mounted such that access to the release button is available from inside the active guard area. Pressing and holding the release button will release the lock mechanism and open the lock monitoring contacts, whilst the guard can be pushed open. Measures should be taken to reduce the risk of improper activation.



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.

Original Instructions.

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