Tongue Switch with Guard Locking & RFID Coding

KLTM-RFID & KLT-SS-RFID Operating Instructions



Application:

The KLTM-RFID and KLT-SS-RFID Safety Interlock switches are designed to fit to the leading edge of machine guard doors to provide robust guard locking and provide a double tamper resistant interlock mechanism.
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 will hold closed up to 2000N on hinged guards. They can be used in conjunction with delay timers to provide the solenoid energisation only after a pre-determined the time has run down.

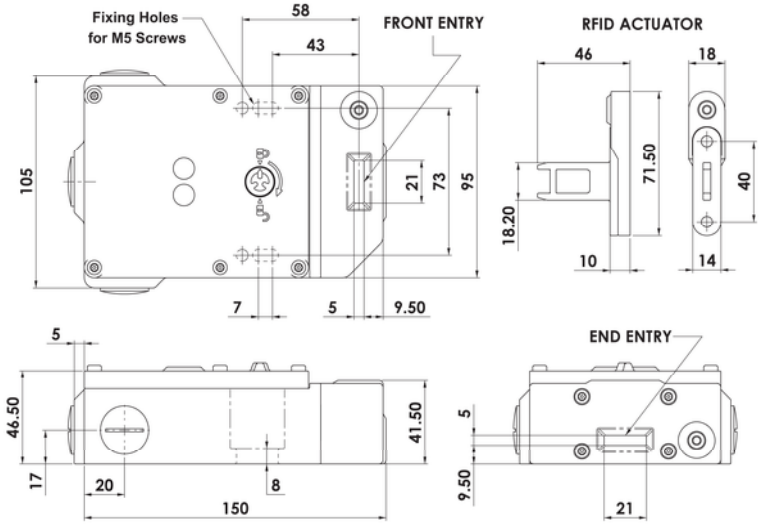
Operation:

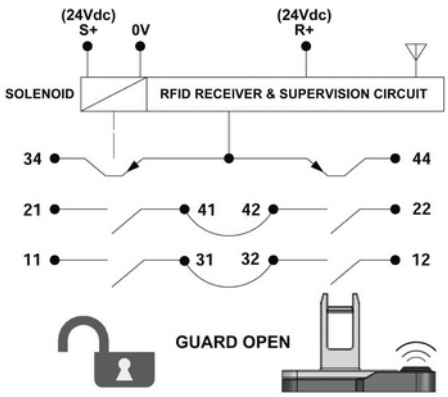
The switch is rigidly mounted to the fixed frame of the guard or machine. The actuator is fitted to the moving part (frame) of the guard and is aligned to the switch entry aperture. The mechanical tongue actuator profile is designed to match a cam mechanism within the switch head and provides a positively operated not easily defeatable mechanical interlock. There is also an RFID coded actuator which aligns with a programmed receiver inside the switch housing during closing of the guard. Only when both actuators are correctly aligned and the RFID coding is verified correctly 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.

Installation:

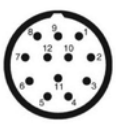
1. Installation of all IDEM interlock switches must be in accordance with a risk assessment for the individual application.
   Installation must only be carried out by competent personnel and in accordance with these instructions.
2. M5 (or appropriate) mounting bolts must be used to fix the switch and 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. The actuator entry position (Front or End) can be selected by using the internal slide switch inside the switch cover (See Fig.2 on page 2).
3. Always fit a mechanical stop to the guard to prevent damage to the front of the switch.
   Always ensure correct alignment of actuator and handle with front apertures of the switch and guide.
   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 switch mechanism.
4. The RFID code is factory set. For instances where replacement of the RFID actuator is required please contact IDEM via e-mail: technical@idemsafety.com.
5. 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. **Important:** If conductor links are removed, circuits 11/31 and 21/41 must always be used.
6. 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.

LED 1 (GREEN) will illuminate when the Gate is locked.
LED 2 (RED) will illuminate when power is applied to the solenoid.





Quick Connect (QC) M23 12 way Male Plug (Pin view from Switch)	Switch Circuit
1	0V
2	R+ 24V.dc
3	S+ 24V.dc
4 6	11/12
7 8	21/22
5	44
9	34
Earth	12



Maintenance:

Every week: Check correct operation of all circuits and the Lock function. If the actuator shows signs of bending or the switch head housing displays mechanical damage then remove and replace.
IDEM will not accept responsibility for failure of the switch functions if the installation and maintenance requirements shown in this sheet are not implemented.
These requirements form part of the product warranty.
Every 6 months: Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch.

THESE INSTRUCTIONS FORM PART OF THE PRODUCT WARRANTY.

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LED Normal Functions:

LED1 Green Guard Locked
LED2 Red Solenoid Energised

LED Diagnostic Functions:

LED1 Steady Yellow — Fault (See special instruction RESET)
LED1 Yellow/Green Alternate Flashing — Tag not recognised or not present.

Guard Door Status	Solenoid	Guard Lock Status	LED1 Green	LED2 Red	11/12 21/22 Safety Outputs	44 Guard OPEN Signal Feed	34 Guard UNLOCKED Signal Feed
Closed	Not Energized	Locked	●	○	Closed	Off 0V.dc	Off 0V.dc
Closed	Energized	Unlocked	○	●	Open	Off 0V.dc	On +24V.dc
Open	Energized	Unlocked	○	●	Open	On +24V.dc	On +24V.dc
Open	Not Energized	Unlocked	○	○	Open	On +24V.dc	On +24V.dc

Special Instruction: RFID actuator – RESET.

In the event that a Fault condition requires reset, follow the reset instructions ***in the correct sequence:***

1) Turn off all power to the switch and open the guard.
2) Remove the switch cover.
3) Using a 2mm terminal screwdriver hold down the RESET button inside the switch housing and turn on the switch power (see Fig.2).
4) Release the RESET button and the yellow LED will begin to flash, close the guard and the yellow LED will turn steady yellow. (If yellow LED continues to flash check for mechanical fault (e.g. damaged actuator or switch head)).
5) Turn power off and then on, the green LED will illuminate.
6) Re-fit the switch cover.
7) Open and close the guard ensuring all safety functions are correct – refer to any risk assessment for the particular guard application.

ENTRY SELECTOR SWITCH (inside cover):

Slide Switch Position 2: FRONT Entry

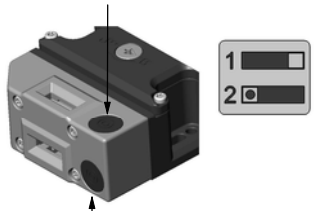


Fig. 1
Entry Selector Switch

Slide Switch Position 1: END Entry

Selector Switch for choice of Front or End sensing. (See Fig 1)

RESET button
(If required press and hold using a 2mm terminal screw driver)

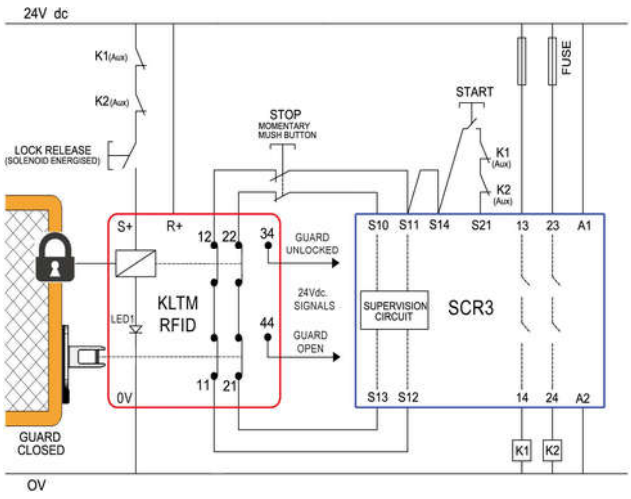


Fig. 2
Cover Removed

Standards: EN1088 EN60947-5-1 EN 60204-1
ISO 13849-1 EN62061 EN 954-1

Safety Classification and Reliability Data:

Mechanical Reliability B10d	2.5 x 10^6 operations at 100mA load
EN 954-1	up to Category 4 with Safety Relay
ISO 13849-1	up to PLe depending upon system architecture
EN 62061	up to SIL3 depending upon system architecture
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day/365 days
PFHd	3.44 x 10^{-8}
Proof Test Interval (Life)	35 years
MTTFd	356 years
Supply Voltage	24V.dc (+/- 10%)
Power consumption:	0.5A. Supply capability 1A.required.
Safety Circuits:	2NC Positive Break and RFID coded
RFID cycle check	0.5s.
Utilization Category	AC15 A300 Maximum Current 3A.
Thermal Test Current (Ith)	3A
Rated Insulation Voltage	500VAC
Rated Impulse Withstand Volt	1000VAC
Travel for Positive Opening	10mm
Man. Actuation Frequency	2 cycle/sec
Actuator entry minimum radius	175mm
Body Case Material	KLTM-RFID: Die Cast - Painted Red KLT-SS-RFID: Stainless Steel
Head Material	Stainless Steel 316
Mechanical Actuator Material	Stainless Steel 316
Enclosure Protection	IP67 IP69K
Operating Temperature	-25°C to 40°C
Mechanical Life Expectancy	1 x 10^6 Cycle min.
Vibration	IEC 68-2-6, 10-55Hz+1Hz, Excursion: 0.35mm, 1 octave/min



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