

Safety Interlock Switch

MKey9



Switch operational description

The MKey9 interlock safety switches are design to provide position interlock detection and locking for moving guards. They are designed to fit the leading edge of sliding, hinged or lift off machine guards. The actuator is fitted to the moving part of the guard and is aligned to the switch entry aperture. The possibility to lock the switch in the protective position prevents unwanted access to machinery until dangerous operations have ceased.

The locking is useful when applications include:

- processes which cannot be interrupted, such as welding.
- machinery with a long stopping procedure, such as paper machinery, that requires a long braking operation.
- prevention of unauthorised access to a particular area.

The head can be set in four positions, thus providing the safety device with eight different operating positions. The leading edges of the actuator key are reinforced and bevelled in order to guide it properly into the hole. The safety switch is design to have a high holding force of 2000N. MKey9 has several types of actuators as an option. A standard actuator key is always delivered with interlock switches.

Material

The MKey9 is made in a rugged polyester housing with a stainless steel head which give the switch a rating of IP67.

Two versions

The MKey9 is available in two basic versions, either with a spring lock or an electro-magnetic lock.

In the spring lock version, the locking mechanism moves

Approvals:



Application:

Gates
Hatches

Features:

Compact and robust
8 actuating positions
High holding force
Up to PL e, Cat.4
LED status indication

into the locked position directly when the door is closed and the actuator key is pushed into the switch. The actuator key can only be released and the gate opened by supplying operational voltage to the solenoid (A1-A2).

MKey9M is the electro-magnetic lock version, the locking mechanism is in the locked position when the solenoid (A1-A2) is supplied with operating voltage. Release of the actuator key is only possible when the operating voltage is removed from the solenoid (A1-A2). The solenoid voltage is 24VDC.

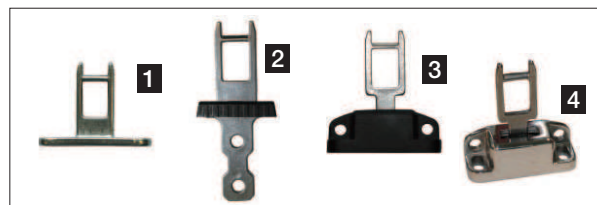
Safety level

The MKey9 has double forced disconnection contacts to the actuator key and the locking mechanism. The actuator key is designed to protect against unauthorised access; no tools, magnets or similar allow that the MKey9 can be tampered with. To achieve maximum safety level in connection with the machine control system, it is recommended that the MKey9 is monitored by an appropriate ABB Jokab Safety safety relay, Pluto safety-PLC or Vital system. To obtain the highest level of safety, two switches per gate are required.

Regulations and Standards

The MKey9 is designed and approved in accordance to relevant standards. Examples of relevant standards are EN1088, IEC/EN60947-5-1, EN60204-1, EN ISO13849-1, EN62061 and UL508.

Technical data – MKey9 series	
Supplier	ABB AB Jokab Safety, Sweden
Article number/ Ordering data	MKey9 - 24VDC MKey9M - 24VDC (power to lock)
EN ISO13849-1	Up to PL e, Cat. 4 depending upon system architecture
EN62061	up to SIL3 depending upon system architecture
Safety data	
Mechanical reliability B_{10d}	2,5 x 10 ⁶ operations at 100mA load
Proof test interval (life) $MTTF_d$	35 years 356 years (8 cycles per hour/24 hours per day/365 days)
Utilisation category	AC15 A300 3A
Solenoid voltage	24VDC
Solenoid power consumption	MKey9 12 W MKey9M 12 W (Inrush 50W)
LED 2 supply voltage	24VDC
Travel for positive opening	10 mm
Actuator entry mini. radius	175 mm standard actuator 100 mm heavy duty actuator
Max. approached/ withdrawal speed	600 mm/s
Rated insulation/ withstand voltages	600VAC / 2500VAC
Vibration resistance	IEC 68-2-6, 10-55 Hz+ 1 Hz excursion: 0.35 mm 1 octave/min.
Thermal current (Ith)	5A
Conduit entry	1 x M20
Enclosure classification	IP67
Operating temperature	MKey9 -25°C to +55°C MKey9M -25°C to +40°C
Head/body material	Stainless steel 316/polyester
Colour	Red
Mounting position	Any
Mounting bolts	4 x M5



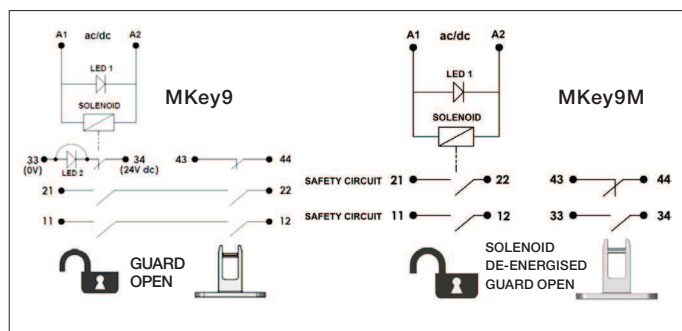
Actuator

- | | |
|--|-----------------|
| 1. Standard Key for SS head | 2TLA050040R0202 |
| 2. Flat Key | 2TLA050040R0220 |
| 3. Flexible Key with metal housing | 2TLA050040R0203 |
| 4. Flexible Key with SS housing
(Key always in Stainless steel) | 2TLA050040R0204 |

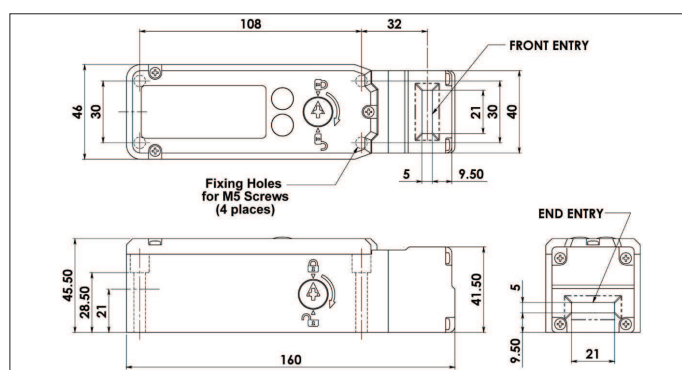


Top or side manual release points (not on MKey9M)

8 actuator entry positions rotatable head



Schematic circuit MKey9 LED1 status of solenoid LED2 status of lock (Terminals 33 - 34 are selectable to be used either as power feed to LED2 or as a voltage free auxiliary circuit to indicate lock status).



Dimensions MKey9 and MKey9M

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

MKey9, Contacts at withdrawal of actuator.

	6.0	5.0	0 mm
11/12	Open		Solenoid energised
21/22	Open		Solenoid energised
33/34	Open		Tongue Inserted
43/44		Open	Tongue Inserted

MKey9M, Contacts at withdrawal of actuator.