Safety Interlock Switch
MKey5

Switch operational description
MKey5 Interlock switches are designed to provide position interlock detection 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 head can be rotated to provide four given actuator entry positions. When the actuator is inserted into the switch the safety contacts close and allow the machine start circuit to be enabled. MKey5 has two versions regarding holding force, 12N and 40N. MKey5 has several types of actuators as an option. A standard actuator key is always delivered with interlock switches.

Material
Depending on the environment where the switch will be used, different material can be chosen on the Mkey5. The basic version is in a full plastic body (polyester) and in cases where the demands are higher on the interlock switch head, there is a version with a plastic body and with a stainless steel head. Both these types give the MKey5 interlock switch a rating of IP67.

In harsh applications as for food processing and chemical industry there is a MKey5Z Interlock switch with a total rugged stainless steel 316 body. This version has IP69K enclosure protection (maintained by a double seal lid gasket) and can be high pressure hosed with detergent at high temperature.

Positive forced disconnected contacts
A positive forced contact provides a forced disconnect of the safety contacts at the withdrawal of the actuator. The design of the MKey5 ensures that the contacts will not fail or be held in a normally closed position, due to failure of the spring mechanism or that welding/sticking of the contacts can occur.

Safety level
The positive forced disconnect contacts gives a high safety level and the interlock switch has an anti-tamper mechanism. By combining the MKey5 with one of our suitable safety control module, for example a safety relay from the RT-series, Pluto safety-PLC or Vital module, the requirements for both hatch and gate switch supervision can be fulfilled. To obtain the highest level of safety, two switches per gate are required.

Explosion Proof version (X)
MKey5 also exist in versions with certified explosion proof contact block (X-versions). MKey5ZX is in stainless steel and can be used in European Zone 1, 2, 21,22 enviroments (Gas and Dust). Preassembled with 3 meter cable.

Regulations and Standards
The MKey5 is designed and approved in accordance to relevant standards. Examples of relevant standards are EN 1088, IEC/EN 60947-5-1, EN 60204-1, EN ISO 13849-1, EN 62061 and UL 508.

Approvals:

Application:
- Gates
- Hatches

Features:
- 2NC + 1NO (actuator in)
- 4 actuating positions
- Holding force 12 or 40N
- Up to PL e/Cat.4
- Plastic, Plastic with stainless steel head or stainless steel (X-versions)

[Image of Safety Interlock Switch MKey5]

TÜV Rheinland

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Technical data – MKey5 series

<table>
<thead>
<tr>
<th>Article number</th>
<th>Standard</th>
<th>MKey5 - 12N</th>
<th>2TLA050003R0100</th>
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<tr>
<td></td>
<td>MKey5+ - 40N</td>
<td>2TLA050003R0101</td>
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<tr>
<td>Stainless steel head</td>
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<td>MKeySZ+ - 40N</td>
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<td>MKeySZX (EX)</td>
<td>2TLA050003R0125</td>
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<td>Level of safety</td>
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<td>EN ISO 13849-1 Up to PL e/Cat. 4 depending upon system architecture</td>
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<tr>
<td>EN 62061</td>
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<td>Up to SIL3 depending upon system architecture</td>
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Safety data
- Mechanical reliability $B_{\text{rel}}$: $2.5 \times 10^6$ operations at 100mA load
- Proof test interval (life): 35 years
- MTTF: 356 years (8 cycles per hour/24 hours per day/365 days)
- Utilisation category: AC15 A300 3A
- Force/travel for positive opening: 6 mm
- Acuator entry mini. radius: 175 mm Standard Key
- 100 mm Flexible Key
- Max. approached/withdrawal speed: 600 mm/s
- Actuator: Stainless steel
- Mechanical life: 1 million switch operations
- Rated insulation/withstand voltage: 500VAC / 2500VAC
- Vibration resistance: IEC 68-2-6, 10-55Hz+1Hz, excursion: 0.35 mm, 1 octave/min
- Contacts (actuator key inserted): 2NC + 1NO (NC are direct opening action)
- Thermal current (Ith): 10A
- Enclosure protection: MKey5 MKey5Z(X) IP67 IP69K and IP67
- Operating temperature: -25°C to +80°C
- Conduit entries: 3 x M20
- Material: MKey5 Polyester or/stainless steel 316
- MKey5Z(X) Stainless steel 316
- Colour: Red or stainless steel
- Mounting position: Any
- Mounting bolts: Body 2 x M5, actuator 2 x M5
- Explosion Proof version (X): Ex d IIC T6 (-20°C ≤ Ta ≤ +60°C) Gb
- Ex tb IIIC T85°C (-20°C ≤ Ta ≤ +60°C) Db
- Rated Voltage: 250V AC/DC
- Rated Current: 2 pole 4A
- 4 pole 2.5A

For all MKey the normally closed (NC) circuits are closed when the guard is closed (actuators inserted).