

# IDEM Explosion-Proof Interlock Safety Switches

**KP-EX-200026****K-SS-EX-208026****KM-EX-203026****KM-SS-EX-204026**

IDEM's range of explosion-proof, tongue interlock switches has been developed to satisfy the latest IECEx and ATEX Standards and to provide explosion-proof switching for use in hazardous locations created within the oil, chemical, pharmaceutical, food processing, packaging and other hazardous industries.

Designed to fit to the leading edge of sliding, hinged or lift-off machine guards, these switches provide positively operated switching contacts plus a tamper resistant key mechanism that is not easily defeated. They combine explosion-proof protection and satisfy high functional safety requirements all in one device.

They are available in a variety of housings to satisfy virtually all applications where the potential for explosion exists.

These switches are manufactured with ATEX Exd IIC T6 certified explosion proof contact blocks. All electrical switching elements are fully encapsulated.

## Features

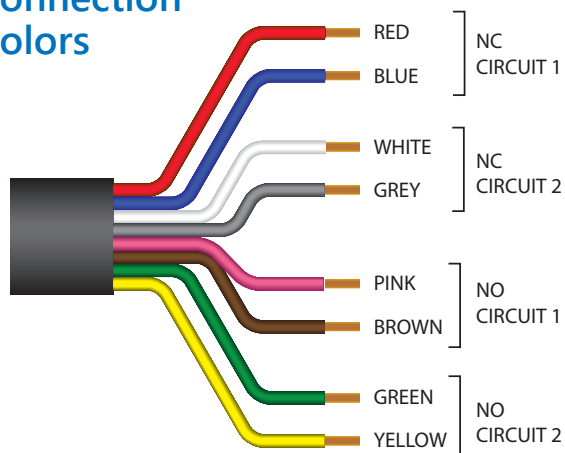
- 3m [9.84 ft] prewired pigtail cable
- Force guided NC contacts
- Two NO and two NC contacts
- Plastic, aluminum and stainless steel 316 options available
- Includes one tamper-proof T20 Torx bit (KM models only)
- Purchase actuating key separately. (See accessories)



## IDEM Explosion Proof Interlock Safety Switches

| Part Number                            | Price    | Body Material       | Head Adjustability | Entry Positions | Actuator Travel | Force for Positive Opening | Contacts   | Weight lb [kg] | Drawings                   |
|----------------------------------------|----------|---------------------|--------------------|-----------------|-----------------|----------------------------|------------|----------------|----------------------------|
| <a href="#"><u>KP-EX-200026</u></a>    | \$595.00 | Plastic             | 180°               | 4               | 6mm [0.24 in]   | 12N                        | 2 NO, 2 NC | 0.88 [0.40]    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>K-SS-EX-208026</u></a>  | \$716.00 | Stainless steel 316 | 180°               | 4               | 6mm [0.24 in]   | 12N                        | 2 NO, 2 NC | 1.98 [0.90]    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>KM-EX-203026</u></a>    | \$635.00 | Die-cast aluminum   | 90°                | 8               | 6mm [0.24 in]   | 12N                        | 2 NO, 2 NC | 1.18 [0.54]    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>KM-SS-EX-204026</u></a> | \$721.00 | Stainless steel 316 | 90°                | 8               | 6mm [0.24 in]   | 12N                        | 2 NO, 2 NC | 2.18 [0.99]    | <a href="#"><u>PDF</u></a> |

## Connection Colors



# IDEM Explosion-Proof Safety Switches Specifications



| Specifications                             |                                                                                  |                                                   |                                       |                                                |                                                     |
|--------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------|------------------------------------------------|-----------------------------------------------------|
|                                            | HLM-EX / HLM-SS-EX                                                               | KM-EX / KM-SS-EX                                  | KP-EX / K-SS-EX                       | GLS-EX / GLS-SS-EX                             | GLHx-EX                                             |
| Safety Classification and Reliability Data |                                                                                  |                                                   |                                       |                                                |                                                     |
| Switching Reliability (B10 <sub>d</sub> )  | 2.5 x 10 <sup>6</sup> operations at 100mA load                                   |                                                   |                                       | 1.5 x 10 <sup>6</sup> operations at 100mA load |                                                     |
| 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                                  |                                                   |                                       |                                                |                                                     |
| MTTF <sub>d</sub>                          | 356 years                                                                        |                                                   |                                       | 214 years                                      |                                                     |
| Agency Approvals                           | ATEX, IECEx, CE<br>The contact block is cURus Hazardous Location rated (E358295) |                                                   |                                       |                                                |                                                     |
| Electrical and General Specifications      |                                                                                  |                                                   |                                       |                                                |                                                     |
| Utilization Category                       | B300 (pilot duty)                                                                |                                                   |                                       |                                                |                                                     |
| Minimum Switch Current                     | 5mA, 5VDC                                                                        |                                                   |                                       |                                                |                                                     |
| Thermal Current                            | 2.5 A max                                                                        |                                                   |                                       |                                                |                                                     |
| Maximum Switching Current                  | 250VAC/DC, 2.5 A maximum                                                         |                                                   |                                       |                                                |                                                     |
| Maximum Approach/Withdrawal Speed          | 600mm/s [23.6 in/s]                                                              |                                                   |                                       | NA                                             |                                                     |
| Enclosure Protection                       | IP67 (IP69K on all models with both stainless steel head and body)               |                                                   |                                       |                                                |                                                     |
| Operating Temperature                      | -20°C to 60°C [-4°F to 140°F]                                                    |                                                   |                                       |                                                |                                                     |
| Vibration                                  | IEC 68-2-6, 10Hz to 55Hz<br>0.35mm [0.01 in]                                     | IEC 68-2-6, 10Hz to 55Hz + 1Hz                    |                                       |                                                |                                                     |
| Lid Screws/Torque                          | Plated brass<br>1 N•m [0.74 lb•ft]                                               | Stainless steel<br>T20 Torx<br>1 N•m [0.74 lb•ft] | Stainless steel<br>1 N•m [0.74 lb•ft] |                                                | Stainless steel<br>T20 Torx<br>1.5 N•m [1.11 lb•ft] |
| Recommended Mounting Screws/Torque         | M4<br>2 N•m [1.48 lb•ft]                                                         | M5<br>4N•m [2.95 lb•ft]                           |                                       |                                                |                                                     |
| Head Screws/Torque                         | Stainless steel, except snap (plated brass)<br>1 N•m [0.74 lb•ft]                | Stainless steel<br>T20 Torx<br>1 N•m [0.74 lb•ft] | Stainless steel; 1 N•m [0.74 lb•ft]   |                                                |                                                     |

# IDEM Interlock/Hinge Safety Travel Charts



## Interlock Safety Switch Types

### Slow-make/slow-break contacts:

A contact element in which the contact motion is dependent on the actuator speed.

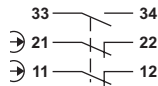
### Snap-action contact:

A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

## Contacts Configuration

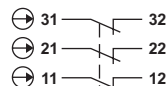
### 1 NO and 2 NC

Slow-make/slow-break contacts



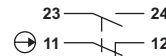
### 3 NC

Slow-make/slow-break contacts



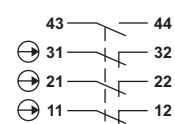
### 1 NO and 1 NC

Snap action contacts



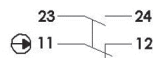
### 1 NO and 3 NC

Slow-make/slow-break contacts



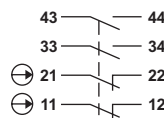
### 1 NO and 1 NC

Slow-make/slow-break contacts



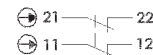
### 2 NO and 2 NC

Slow-make/slow-break contacts



### 2 NC

Slow-make/slow-break contacts



## Travel Charts



### Interlock Switches

2NC 1NO 6.8 6.0 0 mm

|       |      |      |
|-------|------|------|
| 11/12 | Open |      |
| 21/22 | Open |      |
| 33/34 |      | Open |

3NC 6.0 0 mm

|       |      |  |
|-------|------|--|
| 11/12 | Open |  |
| 21/22 | Open |  |
| 31/32 | Open |  |

3NC 1NO 6.8 6.0 0 mm

|       |      |      |
|-------|------|------|
| 11/12 | Open |      |
| 21/22 | Open |      |
| 31/32 | Open |      |
| 43/44 |      | Open |

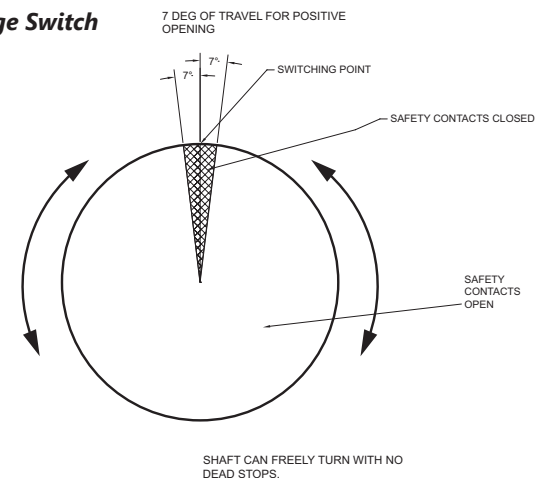
2NC 2NO 6.8 6.0 0 mm

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

1NC 1NO (SNAP) 6.5 0 mm

|       |      |      |
|-------|------|------|
| 11/12 | Open |      |
| 23/24 |      | Open |

### Hinge Switch



User to ensure that by correct positioning of the shaft at installation causes the safety contacts to open such that no hazard exists to the operator when the door is opened a few degrees.

### Safety Rope Switches

| EX | 1 NO/2 NC | 1 NO/3 N.C. | 2 NO/2 N.C. | 0 mm                            | 3.5 mm                              | 14.5 mm            | 17.0 mm |
|----|-----------|-------------|-------------|---------------------------------|-------------------------------------|--------------------|---------|
|    |           |             |             | <b>Latched off - Rope Slack</b> | <b>Tension Range (Switch Reset)</b> | <b>Rope Pulled</b> |         |
| NC | 11/12     | 11/12       | 11/12       | Open                            |                                     | Open               |         |
|    | 21/22     | 21/22       | 21/22       | Open                            |                                     | Open               |         |
|    |           | 31/32       |             | Open                            |                                     | Open               |         |
| NO | 33/34     | 43/44       | 33/44       |                                 | Open                                |                    |         |
|    |           | 43/44       |             |                                 | Open                                |                    |         |

# IDEM Interlock Safety Accessories

## Actuator Keys For Use With KP/K15 and K-SS/KM/KM-SS

- All keys are 316 stainless steel
- Flexible key options available



### IDEM Interlock Safety Switch Actuator Tongue (Keys)

| Part Number                   | Price   | Description                                                                                                | Use With |                   | Minimum Entry Radius<br>Radius<br>(mm [in]) | Weight<br>(lb [g]) | Drawings                   |
|-------------------------------|---------|------------------------------------------------------------------------------------------------------------|----------|-------------------|---------------------------------------------|--------------------|----------------------------|
|                               |         |                                                                                                            | KP/K-15  | K-SS/KM/<br>KM-SS |                                             |                    |                            |
| <a href="#"><u>140106</u></a> | \$10.50 | 40mm mounting hole spacing, 90° stainless steel key/mounting tab                                           | ✓*       |                   | 175mm [6.89]                                | 0.07 [31.8]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140107</u></a> | \$11.00 | 40mm mounting hole spacing, 90° stainless steel key/mounting tab                                           | ✓**      | ✓                 | 175mm [6.89]                                | 0.07 [31.8]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140108</u></a> | \$10.50 | 20mm mounting hole spacing, straight stainless steel key with plastic stop                                 | ✓        | ✓                 | 175mm [6.89]                                | 0.07 [31.8]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140109</u></a> | \$19.50 | 40mm mounting hole spacing, stainless steel key with polyester flexible mounting tab                       | ✓        | ✓                 | 100mm [3.94]                                | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140110</u></a> | \$38.50 | 40mm mounting hole spacing, stainless steel key with black painted aluminum flexible mounting tab          | ✓        | ✓                 | 100mm [3.94]                                | 0.16 [72.6]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140111</u></a> | \$78.00 | 40mm mounting hole spacing, stainless steel key with mirror polished stainless steel flexible mounting tab | ✓        | ✓                 | 100mm [3.94]                                | 0.22 [99.8]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140130</u></a> | \$54.00 | IDEM lockout actuator, stainless steel, for use with IDEM tongue (key) switches                            | ✓        | ✓                 | NA                                          | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |

\* For KP and K-15 series with plastic heads

\*\* For KP and K-15 series with stainless steel heads

# Safety Products



*Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.*

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