

# IDEM Inch Safety Switches

## Inch Series Housing

### IDEM Inch Series

- Tongue interlocking switch
- Designed to fit leading edge, hinged or lift off machine guards
- 16.5 mm- 18mm mounting profile (Inch-X); 16.5 mm- 22mm mounting profile (MK-1)
- M16, 1/2" NPT threaded opening or M12 quick disconnect connection
- 90 degree adjustable head

- Standard and compact housings
- Force guided NC contacts
- Rotating heads with dual actuator entry
- Purchase actuating key separately (See accessories)

See electrical specifications later in this section.



| IDEM Inch Safety Switches                       |          |                     |                     |             |                                              |                                               |                      |            |
|-------------------------------------------------|----------|---------------------|---------------------|-------------|----------------------------------------------|-----------------------------------------------|----------------------|------------|
| Part Number                                     | Price    | Body Material       | Head Material       | Weight (lb) | Actuator Travel / Force for Positive Opening | Contact Configuration                         | Connection           | Dimensions |
| INCH-1 Miniature Tongue Interlock Safety Switch |          |                     |                     |             |                                              |                                               |                      |            |
| <a href="#"><u>INCH-1-222001</u></a>            | \$38.50  | Plastic             | 316 stainless steel | 0.29        | 6mm/12N                                      | 2 N.C. Slow action                            | 1 x M16              | Figure 1   |
| <a href="#"><u>INCH-1-222002</u></a>            | \$68.00  |                     |                     | 0.32        |                                              | M12 Quick disconnect                          |                      |            |
| <a href="#"><u>INCH-1-222003</u></a>            | \$38.50  |                     |                     | 0.29        |                                              | 1 N.O., 1 N.C. Slow action, break before make | 1 x M16              |            |
| <a href="#"><u>INCH-1-222004</u></a>            | \$68.00  |                     |                     | 0.32        |                                              | M12 Quick disconnect                          |                      |            |
| INCH-3 Miniature Tongue Interlock Safety Switch |          |                     |                     |             |                                              |                                               |                      |            |
| <a href="#"><u>INCH-3-223001</u></a>            | \$42.00  | Plastic             | 316 stainless steel | 0.29        | 6mm/12N                                      | 1 N.O., 2 N.C. Slow action, break before make | 3 x M16              | Figure 2   |
| <a href="#"><u>INCH-3-223002</u></a>            | \$71.00  |                     |                     | 0.32        |                                              |                                               | M12 Quick disconnect |            |
| MK1-SS Miniature Tongue Interlock Safety Switch |          |                     |                     |             |                                              |                                               |                      |            |
| <a href="#"><u>MK1-SS-224001</u></a>            | \$122.00 | 316 stainless steel |                     | 0.70        | 6mm/12N                                      | 1 N.O., 2 N.C. Slow action, break before make | 1 x M20              | Figure 3   |
| <a href="#"><u>MK1-SS-224002</u></a>            | \$122.00 |                     |                     | 0.70        |                                              |                                               | 1 x 1/2" NPT         |            |
| <a href="#"><u>MK1-SS-224003</u></a>            | \$152.00 |                     |                     | 0.75        |                                              |                                               | M12 Quick disconnect |            |

# IDEM Inch Safety Switches

## Dimensions

mm [in]

Figure 1

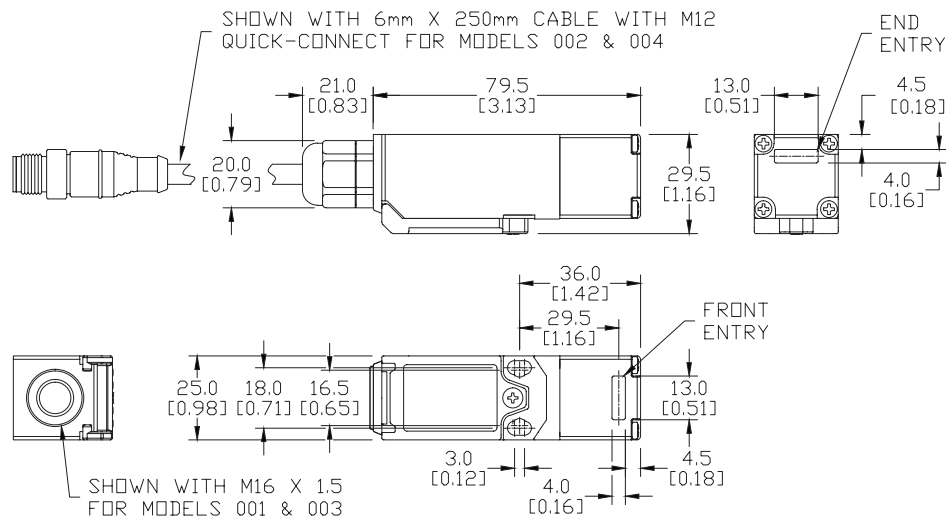


Figure 2

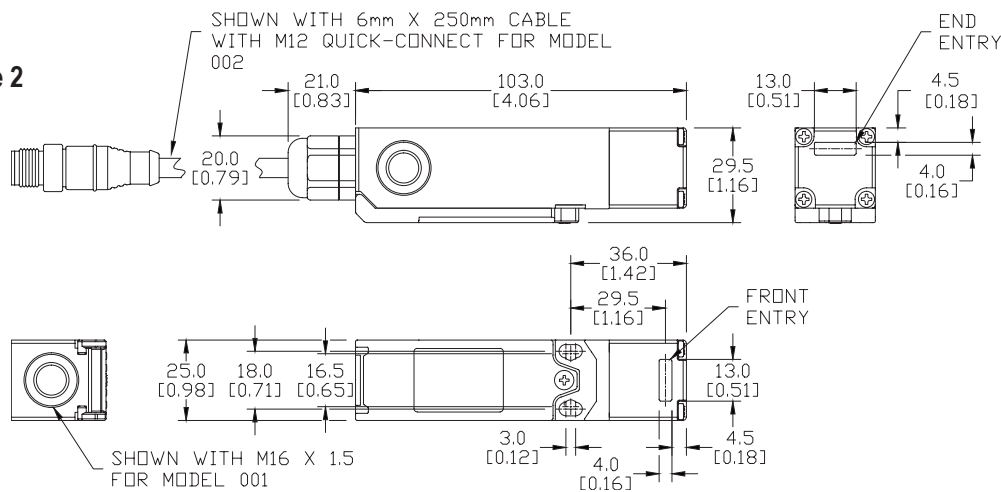
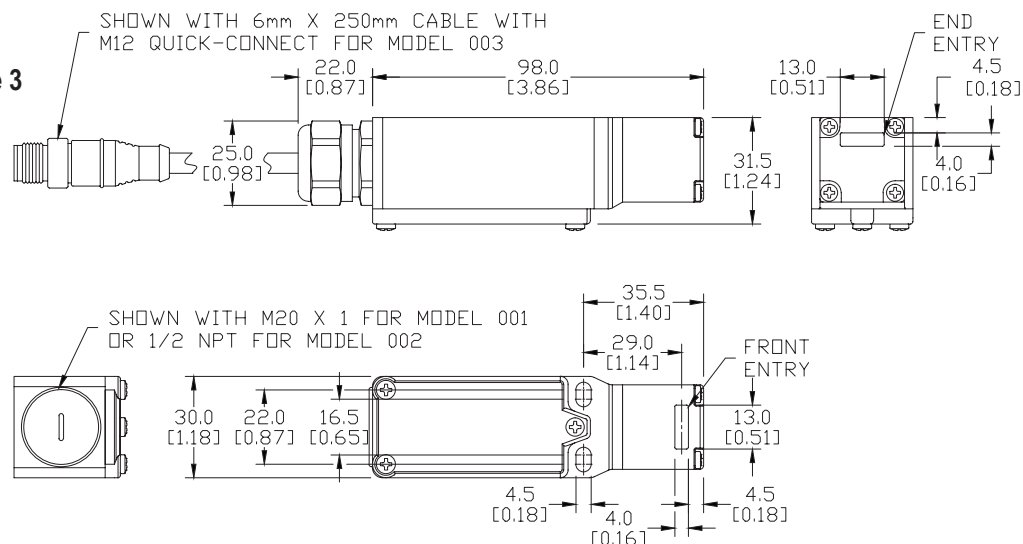


Figure 3



See our website, [www.AutomationDirect.com](http://www.AutomationDirect.com), for complete Engineering drawings.

# IDEM Interlock Safety Accessories



## Actuator Keys For Use With INCH and MK1

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

**140179 140179-SS****140180****140181****140182**

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

| Part Number                      | Price   | Description                                                                                                                                                                | Use With |     | Minimum Entry Radius<br>(mm [in]) | Weight<br>(lb [g]) | Drawings                   |
|----------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|-----------------------------------|--------------------|----------------------------|
|                                  |         |                                                                                                                                                                            | INCH     | MK1 |                                   |                    |                            |
| <a href="#"><u>140179</u></a>    | \$22.50 | IDEM key guide, 316 stainless steel. Mounting hardware included. For use with IDEM INCH series safety switches                                                             | ✓        |     | NA                                | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140179-SS</u></a> | \$22.50 | IDEM key guide, 316 stainless steel. For use with IDEM MK1 series safety switches                                                                                          |          | ✓   | NA                                | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140180</u></a>    | \$11.00 | IDEM actuator tongue (key), 8mm mounting hole spacing, 316 stainless steel, 90 degree mounting tab. For use with IDEM MK1 and INCH series safety switches                  | ✓        | ✓   | 150 [5.91]                        | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140181</u></a>    | \$11.00 | IDEM actuator tongue (key), 15mm mounting hole spacing, 316 stainless steel, straight mounting tab, shock absorbing. For use with IDEM MK1 and INCH series safety switches | ✓        | ✓   | 150 [5.91]                        | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>140182</u></a>    | \$19.50 | IDEM actuator tongue (key), 40mm mounting hole spacing, 316 stainless steel, flexible mounting tab. For use with IDEM MK1 and INCH series safety switches                  | ✓        | ✓   | 100 [3.94]                        | 0.10 [45.4]        | <a href="#"><u>PDF</u></a> |

# IDEM Interlock Safety Switches Specifications



| Specifications                             |                                                                                                                                                 |                                                   |                                       |    |                         |      |                                                     |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------|----|-------------------------|------|-----------------------------------------------------|
|                                            | IDIS                                                                                                                                            | INCH/MK1                                          | HC                                    | KM | KP/K-SS                 | K-15 | GLx                                                 |
| 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                                                                                                 |                                                   |                                       |    |                         |      |                                                     |
| Agency Approvals                           | cULus (E258676), CE                                                                                                                             |                                                   |                                       |    |                         |      | cULus (E258676), CE, TUV                            |
| Electrical and General Specifications      |                                                                                                                                                 |                                                   |                                       |    |                         |      |                                                     |
| Conductor Sizes                            | 16-12 AWG (1.5 to 2.5 mm <sup>2</sup> )                                                                                                         |                                                   |                                       |    |                         |      |                                                     |
| Utilization Category                       | AC15, A300, 3A                                                                                                                                  |                                                   |                                       |    |                         |      |                                                     |
| Thermal Current                            | 10A                                                                                                                                             |                                                   |                                       |    |                         |      |                                                     |
| Short Circuit Overload Protection          | External 10A Fast Acting recommended                                                                                                            |                                                   |                                       |    |                         |      |                                                     |
| Rated Insulation Voltage                   | 600VAC                                                                                                                                          |                                                   |                                       |    | 500VAC                  |      |                                                     |
| Contact Terminals                          | Stainless steel (Snap action plated brass); Max conductor 1.5 m <sup>2</sup> (IDIS), 2.5 m <sup>2</sup> (KM, K/K-15); 1 N•m [0.74 lb•ft] torque |                                                   |                                       |    |                         |      |                                                     |
| Maximum Switching Current                  | 2.5A @24 VDC 6A @ 120VAC, 3A @ 240VDC (720VA Break)                                                                                             |                                                   |                                       |    |                         |      |                                                     |
| 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                      | -25°C to 80°C [-13°F to 176°F]                                                                                                                  |                                                   |                                       |    |                         |      |                                                     |
| Vibration                                  | IEC 68-2-6, 10Hz to 55Hz + 1Hz                                                                                                                  |                                                   |                                       |    |                         |      | 10Hz to 500Hz<br>0.35 mm [0.014 in]                 |
| 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>1.5 N•m [1.11 lb•ft]                                                                                                                      | M5<br>4N•m [2.95 lb•ft]                           | M4<br>1.5 N•m [1.11 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.

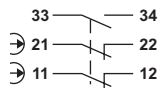
### Snap-action contact:

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

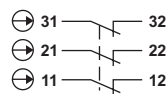
### 1 NO and 2 NC

Slow-make/slow-break contacts



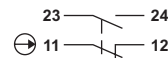
### 3 NC

Slow-make/slow-break contacts



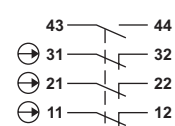
### 1 NO and 1 NC

Snap action contacts



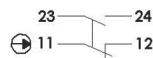
### 1 NO and 3 NC

Slow-make/slow-break contacts



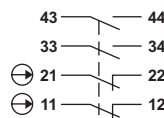
### 1 NO and 1 NC

Slow-make/slow-break contacts



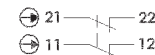
### 2 NO and 2 NC

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 |

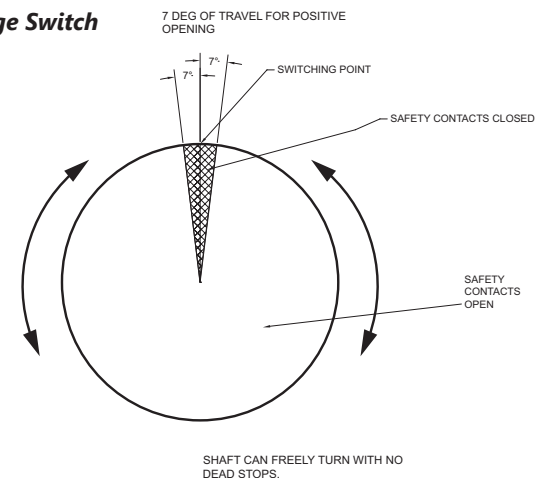
2NC 2NO 6.8 6.0 0 mm

|       |      |      |
|-------|------|------|
| 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 |
|----|-----------|-------------|-------------|--------------------------|------------------------------|-------------|---------|
|    |           |             |             | Latched off - Rope Slack | Tension Range (Switch Reset) | Rope Pulled |         |
| 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       | 43/44       |                          | Open                         |             |         |

# 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.*

*AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.*