GKM Series
(Global Miniature Safety Key Interlock Switch)

**FEATURES**
- Red body colour
- Integrated cable or connector(s)
- Bottom or side entry cable
- 90° and straight key
- Top or side key entry
- High switching current capabilities
- Extremely compact enclosure
- Positive opening operation of Normally Closed contacts conforming to IEC/EN 60947-5-1-3
- IP 67 Enclosure rating
- Stackable design allows one switch on top of the other
- Through wiring option (dual connector)
- Dust cap for unused key entry
- Robust stainless steel keys
- UL listed; CSA certified, CE approved

**BENEFITS**
- Immediately recognisable as safety component
- Reduced installation time and costs
- Flexibility in mounting/actuation options
- Switch equipment directly and through safety control modules
- Fits into extremely compact spaces
- Suitable for wet applications
- Extremely simple mechanical redundancy as well as electrical redundancy
- Very easy to apply to multiple door modular machinery - no difficulty in wiring small switch enclosures
- Durable and tough design

Used alone as Category 1 safety components or, in conjunction with other safety switches and our complete range of safety relays, it is possible to construct comprehensive protection schemes with Category 2, 3 or 4 compliance.

The preleaded versions allow rapid fit, easy cable routing and function testing which cut costs dramatically in OEM applications. Simple upgrade guarding solution for End User applications.

Low energy basic switches are rated as follows:

- Operating Voltage $U_e$: 1 to 50 V ac or V dc
- Operating Current $I_e$: 1 microamp to 100 mA

Example of catalog listing using a low energy basic switch - GKM19W1

**WARNING**

**MISUSE OF DOCUMENTATION**
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.
## GKM Series
### Miniature Safety Key Interlock Switches

#### Technical Data
- **Mechanical life**: >1 Million operations
- **Degree of protection**: IP 66/67, EN 60529 NEMA 1, 12, 13
- **Temperature range**: -25 to +85 °C (-13 to +185 °F)
- **Approvals**: IEC 60947-5-1, EN 60947-5-1, EN 1088, UL508, CSA22-2-14, UL748C
- **Utilization category**: AC15, B300, DC13, Q300
- **Vibration**: IEC 68-2-6 (BS 2011, Part 2.1 Fc) 10g
- **Shock**: IEC 68-2-27 (BS 2011, Part 2.1 Ea) 50g
- **Minimum Door Radius**: 160mm (6.3 in.)

#### Cable/Connector
- **Cable lengths**: In 1 metre increments
- **Cable spec**: SJTOW rated P.V.C. type
- **3 metres is normal maximum cable length.**
- **Zero indicates no cable but connector**

### Ordering:
**Example: GKMD03W2**

**Low Energy Contacts**

Note: See page 167

---

**Courtesy of Steven Engineering, Inc.**

230 Ryan Way, South San Francisco, CA, 94080-6370

Main Office: (650) 588-9200

Outside Local Area: (800) 258-9200

www.stevenengineering.com
Switch Type

<table>
<thead>
<tr>
<th>Connector Pin-Outs</th>
<th>Key Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male 1</td>
<td>Details of straight key (stainless steel)</td>
</tr>
<tr>
<td>Female 2</td>
<td>Replacement part number GKZ51M</td>
</tr>
<tr>
<td></td>
<td>Details of 90° key (stainless steel)</td>
</tr>
<tr>
<td></td>
<td>Replacement part number GKZ52M</td>
</tr>
</tbody>
</table>

**Switch Type**

- **Connector Pin-Outs**
  - Male:
    - 1 Normally Closed/1 Normally Open
    - Slow-Action Contacts
    - Break Before Make
    - BLUE 3 - 1 BROWN
    - WHITE 2 - 4 BLACK
  - Female:
    - 2 Normally Closed
    - Slow-Action Contacts
    - 2 Holes for M4 or #8 Screws
    - FACE 'A'

**Key Style**

- **Details of straight key (stainless steel)**
  - Replacement part number GKZ51M
  - 2 Holes for M4 or #8 Screws
  - 45° C' SK X 2.1 DEEP

- **Details of 90° key (stainless steel)**
  - Replacement part number GKZ52M
  - 2 Holes for M4 or #8 Screws with 45° C' SK X 2.1 DEEP

*Courtesy of Steven Engineering, Inc.*

230 Ryan Way, South San Francisco, CA, 94080-6370
Main Office: (650) 588-9200
Outside Local Area: (800) 258-9200
www.stevenengineering.com
Optional Key Positions

FIT TO UNUSED ENTRY.

SLOT DUST COVER

RECOMMENDED KEY IN POSITION

0.5 (0.019)

Optional Key Positions

Courtesy of Steven Engineering, Inc. • 230 Ryan Way, South San Francisco, CA, 94080-6370 • Main Office: (650) 588-9200 • Outside Local Area: (800) 258-9200 • www.stevenengineering.com
GK Series
Dual Entry Key Operated Safety Interlock Switch

FEATURES
• Side or top key entry
• Unique friction feature for key retention
• LED indicators for status available
• Choice of four heavy duty keys
• Standard mounting per EN 50041
• International conduit offering
• Positive opening operation of Normally Closed contacts conforming to IEC/EN 60947-5-1-3
• Available with 1 NC/1 NO, 2 NC, 3 NC/1 NO and low energy contacts positive opening contact options
• UL listed, CSA and CE compliant

BENEFITS
• Allows up to eight different key entry positions
• Door vibration does not trip the safety circuit
• Remote signalling can be achieved easily at the switch
• Key mounting flexibility and security
• Simple mounting
• Machinery can use local termination standards
• Welded contacts will separate - vital for safety applications
• Choice of wiring capabilities (switching inductive and safety relay loads)

The GK Series is designed specifically for use on machines where key removal brings the machine to an immediate safe condition. It provides enhanced operator safety when added to hinged or sliding guard doors, screens and protective covers on enclosures. The GK Series is especially well suited for large door applications, typically in the automotive plant floor environment. Its heavy duty construction withstands harsh industrial environments where rugged, long-term durability is required.

A safety lockout device is also available for use with the GK Series. The lockout device (GKZL2) is specifically designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device can accommodate up to four padlocks to prevent unauthorised removal of the device.

WARNING
MISUSE OF DOCUMENTATION
• The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
• Complete installation, operation and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.
GKB- Metal Standard
GKC - (w/1 LED)  
12...250 Vac/dc  
GKD - (w/2 LED)  
18...30 Vdc - EN 50041

Technical Data
Mechanical   up to 15 million life operations
Degree of protection  NEMA/UL type 1, 4, 12, 13
Temperature range  Operating: -25 °C to +85 °C / -13 °F to +185 °F
                   Storage:  -40 °C to +85 °C / -40 °F to +185 °F
Approvals  IEC 60947-5-1
            EN 60947-5-1
            ac15 A300/A400
            dc15 C300
            UL & CSA

Operating forces: Insertion force: 35 N / 8 lb
                  Extraction force: 28 N / 6 lb
Vibration 10 g conforming to IEC 68-2-6
Shock 50 g conforming to IEC 68-2-27
Terminal marking to EN50013

* See Standards (page 179)

Dimensions in mm / in

Example:
Standard = B  A = 1/2" NPT
with 1 LED = C  C = 20 mm

Switch Ordering:

Switch Type

- Snap-action contacts, 1 Normally Closed/1 Normally Open
- Slow Acting, 2 Normally Closed
- Slow Acting, 3 Normally Closed/1 Normally Open
- Low energy contacts

Example: GKB36LX + GKZ56
<table>
<thead>
<tr>
<th>Head Orientation</th>
<th>Key Type (sold separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Key Diagram" /></td>
<td><strong>Straight Key</strong></td>
</tr>
<tr>
<td><img src="image2.png" alt="Key Diagram" /></td>
<td><strong>90° Key</strong></td>
</tr>
<tr>
<td><img src="image3.png" alt="Key Diagram" /></td>
<td><strong>Spring-loaded Key: Up/Down</strong></td>
</tr>
<tr>
<td><img src="image4.png" alt="Key Diagram" /></td>
<td><strong>Spring-loaded Key: Left/Right</strong></td>
</tr>
</tbody>
</table>

Door swing radius down to 250 mm / 9.84 in

Door swing radius down to 150 mm / 5.9 in

**Key Ordering:**

X X + GKZ5 X
The GKZL2 lockout device is for use with both the GK and GKR/GKL Series Dual Entry Head products. The lockout device does not activate the switch. It is designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device accommodates up to four padlocks to prevent unauthorised removal of the device.

Mounting dimensional diagram (mm/in):

Ordering:

GKZL2
**GKE Series**

**Dual Entry Safety Interlock Switches**

**DESCRIPTION**
The GKE Series safety key-operated switch provides enhanced reliability for safety hard guarding applications in a compact, cost-effective package.

**FEATURES**
- Positive opening safety contacts
- Multiple contact configurations
- Rotating head allows actuator engagement from five orientations
- Double insulation per IEC 60947-5-1
- Choice of two standard actuators
- Small size
- Most global approvals: cULus, CE, (CCC applied for)

**BENEFITS**
- Designed to minimize intentional tampering or defeat
- Designed to meet application-specific needs
- Small-size provides a valuable solution where space is at a premium
- Designed for global acceptance

**POTENTIAL APPLICATIONS**
- Plastic molding equipment
- Packaging machinery
- Semiconductor manufacturing equipment
- Woodworking machinery
- Metal converting equipment
- Printing/paper finishing equipment
GKE Series

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Designation and Utilization Category</th>
<th>Rated Operational Current Ie (A) at Rated Operational Voltage Ue (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 V</td>
</tr>
<tr>
<td>AC15 A500</td>
<td>—</td>
</tr>
<tr>
<td>AC15 A600</td>
<td>—</td>
</tr>
<tr>
<td>DC13 Q300</td>
<td>2,8 A</td>
</tr>
<tr>
<td></td>
<td>10 A</td>
</tr>
<tr>
<td>Rated thermal current (Ith)</td>
<td></td>
</tr>
<tr>
<td>Sealing</td>
<td>IP66; NEMA 1, 12, 13</td>
</tr>
<tr>
<td>Rated impulse withstand (Uimp)</td>
<td>2500 V</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>3</td>
</tr>
<tr>
<td>Rated insulation voltage (Ui)</td>
<td>500 V, 600 V</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-25 °C to 85 °C [-13 °F to 185 °F]</td>
</tr>
<tr>
<td>Short-circuit protective device (type/max. rating)</td>
<td>Class J fuse (10 A/600 V)</td>
</tr>
<tr>
<td>Conditional short-circuit current</td>
<td>1000 A</td>
</tr>
<tr>
<td>Complies with:</td>
<td></td>
</tr>
<tr>
<td>Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.</td>
<td></td>
</tr>
<tr>
<td>Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.</td>
<td></td>
</tr>
<tr>
<td>IEC/EN60947-5-1.</td>
<td></td>
</tr>
</tbody>
</table>

MOUNTING DIMENSIONS (For reference only mm [in])

Complies with:
Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.
Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.
IEC/EN60947-5-1.
### KEY MOUNTING DIMENSIONS

<table>
<thead>
<tr>
<th>GKZ51M</th>
<th>GKZ52M</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.3 [0.84]</td>
<td>31.8 [1.25]</td>
</tr>
<tr>
<td>15.8 [0.62]</td>
<td>13.9 [0.55]</td>
</tr>
<tr>
<td>24.0 MAX [0.94]</td>
<td>24.0 MAX [0.94]</td>
</tr>
<tr>
<td>1.52 [38.6]</td>
<td>2X Ø5.0 [0.20]</td>
</tr>
<tr>
<td>22.0 [0.87]</td>
<td>22.0 [0.87]</td>
</tr>
<tr>
<td>3.5 [0.14]</td>
<td>12.8 [0.50]</td>
</tr>
<tr>
<td>45.0 [1.77]</td>
<td>31.8 [1.25]</td>
</tr>
<tr>
<td>1.25 [0.05]</td>
<td>2.5 [0.10]</td>
</tr>
<tr>
<td>13,9 [0.55]</td>
<td>2.6 [0.10]</td>
</tr>
</tbody>
</table>

### CIRCUIT AND TRAVEL DIAGRAMS

**Switch Code 01: 1NC/1NO**

1. Recommended key position.

**Switch Code 03: 1NC/1NO (BBM)**

1. Recommended key position.

**Switch Code 06: 2NC**

1. Recommended key position.
## SWITCH ORDER GUIDE (Not all combinations are active listings.)

<table>
<thead>
<tr>
<th>Series</th>
<th>GKE</th>
<th>X</th>
<th>X</th>
<th>Head Orientation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Entry Key Operated Safety Limit Switch</td>
<td></td>
<td></td>
<td></td>
<td>L = Front</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GKE</th>
<th>Contacts</th>
<th>X</th>
<th>X</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 1/2 in NPT</td>
<td>01 = 1NC/1NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C = M20 x 1.5</td>
<td>03 = 1NC/1NO (BBM)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06 = 2NC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Head orientation facing the right, left or back of the switch is available upon request. Minimum order quantities apply.

### SWITCH ORDER GUIDE (active listings)

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKEA01L</td>
<td>Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 1NC/1NO contacts, front head orientation</td>
</tr>
<tr>
<td>GKEA03L</td>
<td>Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 1NC/1NO (BBM) contacts, front head orientation</td>
</tr>
<tr>
<td>GKEA06L</td>
<td>Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 2NC contacts, front head orientation</td>
</tr>
<tr>
<td>GKEC01L</td>
<td>Dual Entry Key Operated Safety Limit Switch, M20 x 1.5 conduit, 1NC/1NO contacts, front head orientation</td>
</tr>
<tr>
<td>GKEC03L</td>
<td>Dual Entry Key Operated Safety Limit Switch, M20 x 1.5 conduit, 1NC/1NO (BBM) contacts, front head orientation</td>
</tr>
<tr>
<td>GKEC06L</td>
<td>Dual Entry Key Operated Safety Limit Switch, M20 x 1.5 conduit, 2NC contacts, front head orientation</td>
</tr>
</tbody>
</table>

### KEY ORDER GUIDE

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKZ51M</td>
<td>Straight Key</td>
</tr>
<tr>
<td>GKZ52M</td>
<td>90 Degree Key</td>
</tr>
</tbody>
</table>

### WARNING

**IMPROPER INSTALLATION**
- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions. Failure to comply with these instructions could result in death or serious injury.

### WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

- **E-mail:** info.sc@honeywell.com
- **Internet:** www.honeywell.com/sensing
- **Phone and Fax:**
  - Asia Pacific: +65 6355-2828, +65 6445-3033 Fax
  - Europe: +44 (0) 1698 481481, +44 (0) 1698 481676 Fax
  - Latin America: +1-305-883-8257 Fax
  - USA/Canada: +1-800-537-6945, +1-815-235-6847, +1-815-235-6545 Fax

**WARNING**

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### Automation and Control Solutions

Sensing and Control
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422
www.honeywell.com/sensing

Honeywell

004738-1-EN  IL50  GLO  Printed in USA
October 2006
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Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
GKR/GKL Series
Dual Entry Solenoid Key Operated Safety Interlock Switch

FEATURES
• Solenoid power to lock or power to unlock
• Side or top key entry
• Separate switches for key position and solenoid status
• Available with two 1 NC/1 NO snap action, two 3 NC/1 NO contact blocks
• 100 mm / 3.94 in x 100 mm / 3.94 in mounting
• Choice of four heavy duty keys
• Key retain force 1000 N max.
• IP 68 (NEMA 6P)
• Two solenoid voltages available
• Dual LEDs
• UL listed / CSA certified / CE compliant
• Red body colour
• Connectorised versions available upon request
• Fluorocarbon sealed enclosure available

BENEFITS
• Allows up to eight different key entry positions
• Flexibility of design
• Switch configuration exactly matches need
• Standard mounting centres
• Key mounting flexibility and security
• Suitable for harsh duty environments
• Operates at standard control voltage
• Use this product anywhere in the world
• Immediately recognisable in the application as a safety component

TYPICAL APPLICATIONS
• Automotive factory floor
• Machine tools sliding doors
• Metalworking machines sliding or hinged doors
• Special purpose machinery cage guarded sliding or hinged doors
• Robotics assembly cells cage guarded sliding or hinged doors
• Plastic moulding machines sliding doors

The GKR (head to the right) and GKL (head to the left) products offer the user an unrivalled range of standard options.

The GKR/GKL product is a key actuated device incorporating a key trapping mechanism. The switch is used on machinery where instant stop and access to the machinery is either impossible (due to the momentum of the machine) or impractical (due to tool or machine damage or scrapped product if the current machine cycle is interrupted).

The switch incorporates a manual override feature which allows removal of the key for emergency access.

A safety lockout device is also available for use with the GKR/GKL Series. The lockout device (GKZL2) is specifically designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device can accommodate up to four padlocks to prevent unauthorised removal of the device.

WARNING
MISUSE OF DOCUMENTATION
• The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
• Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.
**GKR/GKL - Dual Entry Solenoid Key Operated Safety Interlock**

### Technical data

**Mechanical life**
Up to 1 million operations

**Degree of protection**
- IP 68
- NEMA/UL
  - Type 1, 4, 6P, 12, 13

**Temperature range**
- Operating: -25 °C to 40 °C / -13 °F to 104 °F
- Operating: -25 °C to 40 °C / -13 °F to 104 °F

**Approvals**
- IEC 60947-5-1 EN 60947-5-1
- ac15 A300/A600
- dc13 Q300
- UL Listed
- CSA Certified

**Operating forces**
- Insertion force: 35 N / 8 lb
- Extraction force: 28 N / 6 lb
- Max. solenoid locking force: 1000 N / 224 lb

**Directives**
The forced disconnect mechanism on normally closed contacts conforms to IEC 60947-5-1-3.

**Compliance**
This product complies with the Machinery Directive 98/37/EC and complies with EN 60947-5-1.

* See Standards (page 179)

### Dimensions in mm / in

### Switch Ordering:

- **GK**
- **X** or **XX**

**Example:** GKLE36PXA2 + GKZ56

---

**Switch Type**

**Slow Acting, 1 Normally Closed / 1 Normally Open**
Gate and Solenoid Monitor

**Slow Acting, 3 Normally Closed / 1 Normally Open**
Gate and Solenoid Monitor

---

**Head Left or Right**

**Conduit Thread**

- Head on Left = **L**
- E = 1/2" NPT
- Head on Right = **R**
- G = 20 mm

---

- **Industrial Safety Products**

---

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<table>
<thead>
<tr>
<th>Head Orientation</th>
<th>Latching Mechanism</th>
<th>Solenoid and LED Indicator Voltage</th>
<th>Key Type (sold separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td>24 Vdc</td>
<td>Straight Key</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td>120 Vac</td>
<td>90° Key</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
<td></td>
<td>Spring-loaded Key: Up/Down</td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td></td>
<td>Spring-loaded Key: Left/Right</td>
</tr>
<tr>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key Ordering: X + GKZ5
Accessories

The GKZL2 lockout device is for use with both the GK and GKR/GKL Series Dual Entry Head products. The lockout device does not activate the switch. It is designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device accommodates up to four padlocks to prevent unauthorised removal of the device.

Mounting dimensional diagram (mm/in):

Ordering:

GKZL2

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
GKN Series
Safety Interlock Switch

DESCRIPTION
The MICRO SWITCH™ GKN Series safety interlock switches provide superior reliability in a compact, cost-effective package size. Six different types of actuator keys are available.

The GKN Series conforms to IEC 60947-5-1 and carries cULus, CE, and CCC approvals.

FEATURES
- Positive opening safety contacts
- Choice of six actuators
- Double insulated per IEC 60947-5-1
- Global approvals (cULus, CE, CCC)
- Three cable entries
- Large wiring cavity
- Large M20 cable entry
- Four-entry head

BENEFITS
- Meets global safety standards
- Wide application coverage
- No additional earthing requirements
- Final equipment may be sold worldwide
- Cable-to-switch orientation flexibility
- Wiring simplified
- No need to reconfigure head orientation

POTENTIAL APPLICATIONS
- Woodworking machinery
- Printing/paper finishing equipment
- Plastic molding equipment
- Packaging machinery
- Bailing and pumping equipment
- Semiconductor manufacturing equipment
- Packaging wrapping
- Specialty equipment
### GKN Series

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Designation and Utilization Category</th>
<th>Rated Operational Current $I_e$ (A) at Rated Operational Voltage $U_e$ (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120 Vac</td>
</tr>
<tr>
<td>AC15 A600</td>
<td>6 A</td>
</tr>
<tr>
<td>DC13 Q300</td>
<td>–</td>
</tr>
</tbody>
</table>

- **Rated thermal current** ($I_{th}$): 10 A
- **Sealing**: IP67; NEMA 1, 4, 12, 13
- **Rated impulse withstand (Uimp)**: 2500 V
- **Pollution degree**: 2 (micro-environment, inside enclosure); 3 (macro-environment, installation environment)
- **Rated insulation voltage (U_i)**: 600 V
- **Operating temperature range**: -25 °C to 70 °C [-13 °F to 158 °F]
- **Storage temperature range**: -40 °C to 85 °C [-40 °F to 185 °F]
- **Short-circuit protective device (type/maximum rating)**: Class J fuse (10 A/690 V)
- **Expected mechanical life**: 500,000 cycles
- **Conditional short-circuit current**: 1000 A

Complies with:
Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.
Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.
IEC/EN60947-5-1.

#### MOUNTING DIMENSIONS

![Mounting Dimensions Diagram](image)

#### CIRCUIT AND TRAVEL DIAGRAMS

**Switch Code 21 – 2NC/1NO (BBM)**

<table>
<thead>
<tr>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>33</td>
<td>34</td>
</tr>
</tbody>
</table>

**Switch Code 30 – 3NC**

<table>
<thead>
<tr>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>31</td>
<td>32</td>
</tr>
</tbody>
</table>

#### ORDER GUIDE

![Order Guide Diagram](image)
## KEY DIMENSIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKZ41 (M4 Screw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GKZ42 (M5 Screw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GKZ43 (M5 Screw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GKZ44 (M5 Screw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GKZ45 (M5 Screw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GKZF1 (M5 Screw)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ORDER GUIDE (ACTIVE LISTINGS)

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKNA21</td>
<td>3 contact door interlock safety limit switch; 1/2 in NPT conduit; 2NC/1NO (BBM)</td>
</tr>
<tr>
<td>GKNA30</td>
<td>3 contact door interlock safety limit switch; 1/2 in NPT conduit; 3NC</td>
</tr>
<tr>
<td>GKNC21</td>
<td>3 contact door interlock safety limit switch; M20 x 1.5 conduit; 2NC/1NO (BBM)</td>
</tr>
<tr>
<td>GKNC30</td>
<td>3 contact door interlock safety limit switch; M20 x 1.5 conduit; 3NC</td>
</tr>
<tr>
<td>GKZ41</td>
<td>Straight key</td>
</tr>
<tr>
<td>GKZ42</td>
<td>90° key</td>
</tr>
<tr>
<td>GKZ43</td>
<td>Left-right adjustable key</td>
</tr>
<tr>
<td>GKZ44</td>
<td>Up-down adjustable key</td>
</tr>
<tr>
<td>GKZ45</td>
<td>Multidirectional key</td>
</tr>
<tr>
<td>GKZF1</td>
<td>Funnel key</td>
</tr>
</tbody>
</table>

---

### WARNING

**PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury. **Failure to comply with these instructions could result in death or serious injury.**

---

### WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

---

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**E-mail:** info.sc@honeywell.com  
**Internet:** www.honeywell.com/sensing  
**Phone and Fax:**
- **Asia Pacific** +65 6355-2828  
  +65 6445-3033 Fax  
- **Europe** +44 (0) 1698 481481  
  +44 (0) 1698 481676 Fax  
- **Latin America** +1-305-805-8188  
  +1-305-883-8257 Fax  
- **USA/Canada** +1-800-537-6945  
  +1-815-235-6847  
  +1-815-235-6545 Fax
GKS Series
Multi-Entry Trapped Key-Operated Safety Interlock Switch

DESCRIPTION
The introduction of the GKS product marks a significant new product class for Honeywell. Honeywell’s switching expertise has been applied to a cost-effective, trapped key safety interlock switch. This product allows OEMs to hold a door or gate closed while a hazard still exists. This is particularly important where there is momentum in the machine. In other words, when the machine is signaled to stop, the momentum in the machine can mean that parts of the machine are still moving and pose an injury risk if the access gate or door is not held closed. Global approvals and standards are important to Honeywell’s customers; therefore, the GKS product conform to the requirements of IEC60947-5-1 and carries cULus, CE and CCC approvals.

FEATURES
- Global approvals (CE, cULus, CE, and CCC)
- Glass-filled polyester body
- Power-to-lock and power-to-unlock schemes for key trap
- Flexible switching arrangement
- 24 Vdc, 110 Vac, and 230 Vac coil voltages
- Over-ride mechanism in cover
- Head may be rotated into 4 different positions
- Three conduit openings (knock-out style)
- Switch position provides status

BENEFITS
- Product may be applied to most applications worldwide
- Tough, cost-effective, double-insulated enclosure
- Choice of key trapping methodology
- Four contacts that can be arranged in any configuration
- Multiple voltages provide for every geography
- Has a method to open door (in case of power loss, etc.)
- One part number may be used for multiple applications
- Flexible wiring options
- Can diagnose status of gate/door (gate/door closed and locked, gate/door closed and unlocked, gate/door open)

1 There will be minimum volume requirements for unreleased options.

POTENTIAL APPLICATIONS
- Woodworking machinery
- Printing/paper finishing equipment
- Plastic molding equipment
- Packaging machinery
- Bailing
- Pumping equipment
- Semiconductor manufacturing equipment
- Packaging wrapping
- Specialty equipment
- Machine tool
- Robot cell
GKS Series

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Designation and Utilization Category</th>
<th>Rated Operational Current Ie (A) at Rated Operational Voltage Ue (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120 Vac</td>
</tr>
<tr>
<td>AC15 B300</td>
<td>3 A</td>
</tr>
<tr>
<td>DC13 Q300</td>
<td>–</td>
</tr>
</tbody>
</table>

- Rated thermal current (Ith): 5 A
- Sealing: IP67; NEMA 1, 4, 12, 13
- Rated impulse withstand (Uimp): 2500 V
- Pollution degree: 3 (macro-environment, installation environment)
- Rated insulation voltage (Ui): 600 V
- Operating temperature range: -25 °C to 50 °C [-13 °F to 122 °F]
- Storage temperature range: -40 °C to 85 °C [-40 °F to 185 °F]
- Short-circuit protective device (type/maximum rating): Class J fuse (5 A/600 Vac)
- Expected mechanical life: 1,000,000 operations
- Conditional short-circuit current: 1000 A
- Solenoid operating voltage and power:
  - 24 Vac: +10 %, -15 %, 4 W
  - 110 Vac: +10 %, -15 %, 8 W
  - 230 Vac: +10 %, -15 %, 9 W
  - 24 Vdc: +10 %, -20 %, 7 W

Complies with:
- Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.
- Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.
- IEC/EN60947-5-1.

PART NUMBER TREE

<table>
<thead>
<tr>
<th>GKS</th>
<th>X</th>
<th>XX</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Series</td>
<td>Conduit</td>
<td>Contacts</td>
<td>Head</td>
<td>Locking</td>
<td>Solenoid</td>
</tr>
<tr>
<td></td>
<td>Door</td>
<td>Interlock</td>
<td>Safety Limit</td>
<td>Orientation</td>
<td>Principal</td>
<td>Voltage</td>
</tr>
<tr>
<td></td>
<td>Switch,</td>
<td>之称</td>
<td>Solenoid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/2 NPT</td>
<td>A - 21 - 2NC/1NO/1NO</td>
<td>L -</td>
<td>A -</td>
<td>24 Vac/dc</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22 - 2NC/1NO/1NO</td>
<td>Front</td>
<td>S -</td>
<td>110 Vac</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>46 - 3NC/1NO</td>
<td>Back</td>
<td>Power to unlock</td>
<td>5 -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>47 - 4NC</td>
<td>Left</td>
<td>Power to lock</td>
<td>6 -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Right</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: The part number tree is provided to demonstrate the potential combinations of components. Actual availability of individual product combinations will depend on the popularity of that type. Please check with your local distributor or Honeywell representative for the available types in your region.

LED OPTION

The built-in LED is suitable for direct installation in the M20 x 1.5/0.5 in NPT thread, one of the three cable entries in the GKS safety switch. The built-in LED can indicate to the user whether the solenoid is unlocked/locked or whether the door is open/closed. The switching element can be wired individually.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED color</td>
<td>Red</td>
</tr>
<tr>
<td>Connection</td>
<td>2 connection cables</td>
</tr>
<tr>
<td>Screw-in thread</td>
<td>M20 x 1.5/0.5 in NPT</td>
</tr>
<tr>
<td>Operating voltage/current consumption</td>
<td>24 Vdc/45 Ma 115 Vac/15 mA 230 Vac/15 mA</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP67</td>
</tr>
</tbody>
</table>
GKS Series

SWITCH ORDER GUIDE (ACTIVE LISTINGS)

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKSA46LA2</td>
<td>0.5 in conduit, 3NC/1NO, head to front, power to unlock, 24 Vdc solenoid</td>
</tr>
<tr>
<td>GKSA46LA5</td>
<td>0.5 in conduit, 3NC/1NO, head to front, power to unlock, 110 Vac solenoid</td>
</tr>
<tr>
<td>GKSC46LA2</td>
<td>20 mm conduit, 3NC/1NO, head to front, power to unlock, 24 Vdc solenoid</td>
</tr>
<tr>
<td>GKSC46LA6</td>
<td>20 mm conduit, 3NC/1NO, head to front, power to unlock, 230 Vac solenoid</td>
</tr>
</tbody>
</table>

KEY ORDER GUIDE (ACTIVE LISTINGS)

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
<th>Min. Actuating Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKZS6</td>
<td>Straight key</td>
<td>min. R 160 [6.30]</td>
</tr>
<tr>
<td>GKZS7</td>
<td>90° key</td>
<td>min. R 160 [6.30]</td>
</tr>
<tr>
<td>GKZS8</td>
<td>Left-right adjustable key</td>
<td>min. R 32 [1.26]</td>
</tr>
<tr>
<td>GKZS4</td>
<td>Up-down adjustable key</td>
<td>min. R 45 [1.77]</td>
</tr>
<tr>
<td>GKZS9</td>
<td>Multidirectional key</td>
<td>Moveable max. 18 degrees</td>
</tr>
<tr>
<td>GKZSF</td>
<td>Funnel key</td>
<td>min. R 160 [6.30]</td>
</tr>
</tbody>
</table>

CIRCUIT AND TRAVEL DIAGRAMS

<table>
<thead>
<tr>
<th>Circuit Drawing</th>
<th>Inserted &amp; Locked</th>
<th>Inserted &amp; Unlocked</th>
<th>Removed &amp; Locked</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKS.21..</td>
<td>13[O Reg] 0 14</td>
<td>13[O Reg] 0 14</td>
<td>13[O Reg] 0 14</td>
</tr>
<tr>
<td>GKS.22..</td>
<td>11[O Reg] 0 12</td>
<td>11[O Reg] 0 12</td>
<td>11[O Reg] 0 12</td>
</tr>
<tr>
<td></td>
<td>33[O Reg] 34</td>
<td>33[O Reg] 34</td>
<td>33[O Reg] 34</td>
</tr>
<tr>
<td>GKS.46..</td>
<td>13[O Reg] 0 14</td>
<td>13[O Reg] 0 14</td>
<td>13[O Reg] 0 14</td>
</tr>
<tr>
<td>GKS.47..</td>
<td>11[O Reg] 0 12</td>
<td>11[O Reg] 0 12</td>
<td>11[O Reg] 0 12</td>
</tr>
</tbody>
</table>

NOTE: This ‘truth table’ shows the switch status in various conditions. In each column, there is a change in switch contact position from the previous column. It is possible to determine the status of the switch by examining the combination against the table. This can be essential for operational reasons. For instance, the machine should not be started until the key is not only in the head, but is also trapped.

The first column depicts the key inserted and the key trapped in that position – this would be the typical run position for the machine – all doors closed. The second column illustrates the key inserted, but not trapped – this would be the safe-to-open the door position (as determined by the application’s safety scheme). The third column shows the key extracted or door-open position.
### Multi-Entry Trapped Key-Operated Safety Interlock Switch

#### KEY DIMENSIONS

<table>
<thead>
<tr>
<th>GKZS6</th>
<th>GKZS7</th>
<th>GKZS8</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="GKZS6 Diagram" /></td>
<td><img src="image2" alt="GKZS7 Diagram" /></td>
<td><img src="image3" alt="GKZS8 Diagram" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GKZS4</th>
<th>GKZS9</th>
<th>GKZSF</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="GKZS4 Diagram" /></td>
<td><img src="image5" alt="GKZS9 Diagram" /></td>
<td><img src="image6" alt="GKZSF Diagram" /></td>
</tr>
</tbody>
</table>
**WARNING**

**IMPROPER INSTALLATION**
- Consult with local safety agencies and their requirements when designing a machine-control link, interface, and all control elements that affect safety.
- Strictly adhere to all installation instructions

Failure to comply with these instructions could result in death or serious injury.

---

**WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

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- **Internet:** www.honeywell.com/sensing
- **Phone and Fax:**
  - Asia Pacific  +65 6355-2828
  - Europe        +44 (0) 1698 481481
  - Latin America +1-305-805-8188
  - USA/Canada    +1-800-537-6945

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GSS Series
Global Safety Switch

FEATURES
- EN 50041 and EN 50047 mounting and characteristics
- Designed to IEC electrical standard for world-wide use in guarding applications
- Positive opening operation of NC (Normally Closed) contacts conforming to IEC/EN 60947-5-1-3
- Available with a wide range of positive opening contacts
- Rugged housing (Zinc Die-cast)
- Tamper resistant design uses TORX® head security screw
- Full range of actuator heads and levers suitable for safety applications
- Sealing up to IP 67, NEMA 1, 4, 12 & 13
- Snap action and slow action basic switches
- International conduit sizes
- Galvanically isolated contacts
- UL listed; CSA and CE certified, BG approved
- Red body colour for easy safety recognition

BENEFITS
- Standard mounting and characteristics
- Globally available and accepted
- Welded NC contacts will separate – vital security in safety applications
- Range of actuation methods for detecting safety conditions in guarding and machine status applications
- Wiring and body flexibility
- Suitable for inductive switching and safety relay interfaces
- Signalling and power/safety circuits may be different polarities or voltages
- Immediately recognisable in the application as a safety component

GSS Series products may be used alone as Category 1 per EN 954-1 safety component. In conjunction with other safety switches and our complete range of safety control modules, it is possible to construct comprehensive protection schemes with Category 2, 3 or 4 compliance per EN 954-1.

Honeywell’s design experience has resulted in a brand new patented concept in safety switching techniques. The sequential safety switch incorporates positive opening on the downward stroke of each NC sequence point. This allows the user to have both a warning signal and a stop signal. With this information a door can be closed before it stops a machine or settings adjusted to stop excessive movement thus avoiding down time.

LOW ENERGY SWITCHING
In today’s demanding age of low energy controls, electromechanical switches are frequently used to interface directly with safety relays, PLCs and other low energy devices. To accommodate this requirement GSS offers gold plated contact versions of the standard basic switch. This improves reliability of switching at low currents and voltages, by protecting the contact surfaces from contamination during operation or storage prior to use.

Standard silver contacts have a disadvantage in that the contact surface may tarnish under certain environmental conditions e.g. in the presence of moisture.

Low energy basic switches are rated as follows:
Operating Voltage $U_e$ 1 to 50 Vac or Vdc
Operating Current $I_e$ 1 µA to 100 mA

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.
GSA EN 50041
Safety Metal
Standard

Technical Data

Mechanical life up to 15 million operations
Degree of protection IP 67
NEMA/UL type 1, 4, 12, 13
Temperature range Operating: -25 °C to +85 °C / -13 °F to +185 °F
Storage: -40 °C to +85 °C / -40 °F to +185 °F

Approvals
IEC 60947-5-1
EN 60947-5-1
ac15 A300/A600
dc13 Q300
UL & CSA

Vibration 10 g conforming to IEC 68-2-6
Shock 50 g conforming to IEC 68-2-27
Terminal marking to EN50013

* See Standards (page 179)

Dimensions in mm / in

Conduit Thread

A = 1/2” NPT
C = 20 mm

Ordering: GSA X

Example: GSA C 01 B

Snap-Action Contacts
1 NORMALLY CLOSED/
1 NORMALLY OPEN

Slow-Action Contacts
2 NORMALLY CLOSED

Circuit closed
* Positive opening to IEC/EN 60947-5-1-3

Operating:
(F.P.) 0°
(D.P.) 26°
(R.P.) 14°
(D.T.) 12°
(+) 55°
(G.T.) 71° to 85°

Positive opening occurs at operating position. But to meet IEC/EN 60947-5-3 which requires a dielectric gap of 2.5 kV, positive opening is assured at*.

Note: See page 179

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Additional Lever Types

For use with all Side Rotary Head Styles.

Figure 1 illustrates standard lever types which conform to EN 50041.

All dimensions are in mm / in.
Slow-Action Contacts
3 NORMALLY CLOSED/
1 NORMALLY OPEN
BREAK BEFORE MAKE

Actuator Types

Side Rotary, metal roller

Top pin plunger

Top roller plunger

Low Energy Contacts

Note: See page 197
GSC EN 50047
Safety Metal Standard

Technical Data

Mechanical
- up to 15 million life operations

Degree of protection
- IP 66
- NEMA/UL type 1, 4, 12, 13

Temperature range
- Operating: -25 °C to +85 °C / -13 °F to +185 °F
- Storage: -40 °C to +85 °C / -40 °F to +185 °F

Approvals
- IEC 60947-5-1
- EN 60947-5-1
- ac15 A300
- dc13 Q300
- BG, UL & CSA

Vibration
- 10 g conforming to IEC 68-2-6

Shock
- 50 g conforming to IEC 68-2-27

Terminal marking to EN 50013

* See Standards (page 179)

Dimensions in mm / in

Snap-Action Contacts
1 NORMALLY CLOSED/
1 NORMALLY OPEN

Slow-Action Contacts
2 NORMALLY CLOSED

Note: Incorporates safety screws

Conduit Thread

A = 1/2" NPT
C = 20 mm

Ordering:

Example: GSC C 01 B

Low Energy Contacts
Note: See page 197

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
## Additional Lever Types

For use with all Side Rotary Head Styles.  
All dimensions are in mm / in.

Figure 2 illustrates standard lever types which conform to EN50047.

### Actuator Types

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Dimensions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side Rotary, metal roller</td>
<td>15 ± 3 / 0.60 ± 0.12</td>
<td>Additional levers available</td>
</tr>
<tr>
<td>Top pin plunger</td>
<td>10 ± 1.5 / 0.39</td>
<td>(see page 288)</td>
</tr>
<tr>
<td>Top roller plunger</td>
<td>20 ± 0.79</td>
<td></td>
</tr>
</tbody>
</table>

### GSS Series

- **A1B** Side Rotary Roller Lever  
- **B** Top Pin Plunger  
- **C** Top Roller Plunger  

---

*Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com*
**GSD EN 50047**

**Safety Double Insulated Standard**

**Technical Data**

**Mechanical**
- up to 15 million life operations

**Degree of protection**
- IP66
- NEMA/UL type 1, 12, 13

**Temperature range**
- Operating: -25 °C to +85 °C / -13 °F to +185 °F
- Storage: -40 °C to +85 °C / -40 °F to +185 °F

**Approvals**
- IEC 60947-5-1
- EN 60947-5-1
- ac15 A600
- dc13 C300
- BG, UL & CSA

**Vibration**
- 10 g conforming to IEC 68-2-6

**Shock**
- 50 g conforming to IEC 68-2-27

**Terminal marking**
- to EN 50013

*See Standards (page 179)*

**Dimensions in mm / in**

- Conduit Thread
  - A = 1/2" NPT
  - C = 20 mm

**Ordering:**
- GSD
  - Example: GSD C 01 B

**Snap-Action Contacts**
1 NORMALLY CLOSED
1 NORMALLY OPEN

**Slow-Action Contacts**
2 NORMALLY CLOSED

---

**Note:**
- Positive opening to IEC/EN 60947-5-1-3
- Positive opening occurs at operating position. But to meet IEC/EN 60947-5-3 which requires a dielectric gap of 2.5 kV, positive opening is assured at.

---

* Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Additional Lever Types

For use with all Side Rotary Head Styles.

All dimensions are in mm / in

Figure 2 illustrates standard lever types which conform to EN 50047.

Side Rotary, metal roller

Top pin plunger

Top roller plunger

Figure 2
GSE EN 50047 Compatible Safety 3 Conduit Metal Standard

### Technical Data

**Mechanical**
- Life: up to 15 million operations

**Degree of protection**
- IP66
- NEMA/UL type 1, 4, 12, 13

**Temperature range**
- Operating: -25 °C to +85 °C / -13 °F to +185 °F
- Storage: -40 °C to +85 °C / -40 °F to +185 °F

**Approvals**
- IEC 60947-5-1
- EN 60947-5-1
- ac15 A300
- dc13 Q300
- BG, UL & CSA

**Vibration**
- 10 g conforming to IEC 68-2-6

**Shock**
- 50 g conforming to IEC 68-2-27

**Terminal marking**
- to EN 50013

*See Standards (page 179)

### Dimensions in mm / in

<table>
<thead>
<tr>
<th>Conduit Thread</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>= 1/2&quot; NPT</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>= 20 mm</td>
</tr>
</tbody>
</table>

### Ordering:

**Example:** GSE C 20 B

**Low Energy Contacts**
- Note: See page 201

---

**Slow-Action Contacts**

3 NORMALLY CLOSED
1 NORMALLY OPEN
BREAK BEFORE MAKE

**Actuator Types**

A1B

Additional levers available (see page 208)

Side Rotary, metal roller

Top pin plunger

Top roller plunger

* Point from which the positive opening is assured

** Positive opening occurs at operating position. But to meet IEC/EN 60947-5-3 which requires a dielectric gap of 2.5 kV, positive opening is assured at.*

---

**Conduit Thread**

Note: Incorporates safety screws

---

**Ordering:**

**Example:** GSE C 20 B

- Industrial Safety Products**

GSS Series

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Additional Lever Types

For use with all Side Rotary Head Styles.

All dimensions are in mm / in

Figure 2 illustrates standard lever types which conform to EN 50047.

Figure 2

Side Rotary Roller Lever
A1B Metal Roller
MICRO SWITCH™
GSX Series
Explosion-Proof Safety Switch

DESCRIPTION
Honeywell Sensing and Control MICRO SWITCH™ GSX Series Explosion-Proof Safety Switches combines the world-class MICRO SWITCH™ global safety switch (GSS) with our superior explosion-proof housing from our LSX and BX product lines, offering our customers the best of our engineering expertise.

The positive break feature is designed to provide a safe failure mode, ensuring the machine will not start, and therefore supporting a safer working environment.

The GSX Series safety switch platform allows for over 10,000 actuator and switching option combinations, enabling our customers to source most of their safety and explosion-proof switch requirements from a single, global supplier.

FEATURES
- Snap-action contacts with positive break
- Positive action push plunger breaks current upon opening of door or aperture
- Explosion-proof housing for hazardous locations
- NEMA 1, 3, 4, 12, 13 and IP67 sealing
- cULus, ATEX, IECEx
- Simple installation
- Positive break feature
- Extensive switching options and actuator styles

POTENTIAL APPLICATIONS
Gates, doors, access panels or cages on machinery in:
- Hydrocarbon refining
- Chemical processing
- Agricultural equipment
- Food processing
- Grain elevators

BENEFITS
- Designed to ensure that even welded contacts will open and the machine will stop in an emergency
- Breaks current upon opening of door or aperture
- Reduces risk that hazardous gases or dusts could cause an explosion
- Meets IECEx standards
- Designed to provide a safe failure mode, ensuring the machine will not start
- Superior sealing for different applications
# MICRO SWITCH™ GSX Series

## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Designation and Utilization Category</th>
<th>Rated Operational Current (Ie) (A) at Rated Operational Voltage (Ue) (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 V</td>
</tr>
<tr>
<td>AC15 A300</td>
<td>__</td>
</tr>
<tr>
<td>AC15 A500</td>
<td>__</td>
</tr>
<tr>
<td>AC15 A600</td>
<td>__</td>
</tr>
<tr>
<td>DC13 Q300</td>
<td>2,8 A</td>
</tr>
</tbody>
</table>

- **Rated thermal current (Ith)**: 10 A
- **Rated impulse withstand (Uimp)**: 2500 V
- **Rated insulation voltage (Ui)**: 300 V, 500 V, 600 V
- **Sealing**: IP67; NEMA 1, 3, 4, 12, 13
- **Pollution degree**: 3
- **Operating temperature range**: -40 °C to 70 °C [-40 °F to 158 °F]
- **Class J fuse (10 A/600 V)**
- **Expected mechanical life**: 1,000,000 operations

Complies with:
- Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.
- Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.
- IEC/EN60947-1, IEC/EN60947-5-1.
**NOMENCLATURE TREE**
**MICRO SWITCH™ GSX Series Nomenclature**

<table>
<thead>
<tr>
<th>GSX</th>
<th>A</th>
<th>16</th>
<th>A</th>
<th>B</th>
<th>Actuator options</th>
<th>Modifications/Specials</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 in NPT</td>
<td>01</td>
<td>Side rotary momentary</td>
<td>1</td>
<td>A</td>
<td>19 x 6.35 (0.75 x 0.25) nylon roller</td>
<td>1 Clockwise rotation</td>
</tr>
<tr>
<td>PS 135</td>
<td>03</td>
<td>Slow acting, 1NC/1NO: Break before make</td>
<td>C</td>
<td>B</td>
<td>25.4 x 12.7 (1 x 0.5) nylon roller</td>
<td>2 Counterclockwise rotation</td>
</tr>
<tr>
<td>20 mm</td>
<td>04</td>
<td>Slow acting, 1NC/1NO: Make before break</td>
<td>D</td>
<td>C</td>
<td>38.1 x 6.35 (1.5 x 0.25) nylon roller</td>
<td>3 Head prob. w/ actuator to right side</td>
</tr>
<tr>
<td>PF 1/2</td>
<td>06</td>
<td>Slow acting, 2NC</td>
<td>E</td>
<td>D</td>
<td>19 x 6.35 (0.75 x 0.25) bronze roller</td>
<td>4 Head prob. w/ actuator to left side</td>
</tr>
<tr>
<td>Snap action, 1NC/1NO, gold</td>
<td>07</td>
<td>Snap action, 2NC/2NO</td>
<td>F</td>
<td>E</td>
<td>38.1 x 12.7 (1.5 x 0.495) bronze roller</td>
<td>5 Head prob. w/ actuator to emp. sur</td>
</tr>
<tr>
<td>Snap action, 2NC/2NO, gold</td>
<td>22</td>
<td>Snap action, 2NC/2NO</td>
<td>G</td>
<td>F</td>
<td>50.5 x 12.7 (2 x 0.495) bronze roller</td>
<td>6 Roller perpendicular to mounting surface</td>
</tr>
<tr>
<td>Snap action, 2NC/2NO</td>
<td>33</td>
<td>Slow acting, 1NC/1NO: Break before make, gold</td>
<td>H</td>
<td>G</td>
<td>25.4 x 12.7 (1 x 0.5) nylon roller</td>
<td>C Preassembled cab</td>
</tr>
<tr>
<td>Slow acting, 1NC/1NO</td>
<td>34</td>
<td>Slow acting, 2NC/2NO</td>
<td>I</td>
<td>H</td>
<td>38.1 x 12.7 (1.5 x 0.5) nylon roller</td>
<td>D Connector</td>
</tr>
<tr>
<td>Slow acting, 2NC/2NO</td>
<td>36</td>
<td>Slow acting, 2NC/2NO</td>
<td>J</td>
<td>I</td>
<td>19 x 6.35 (0.75 x 0.25) bronze roller</td>
<td></td>
</tr>
<tr>
<td>Slow acting, 2NC/2NO, gold</td>
<td>40</td>
<td>Slow acting, 2NC/2NO</td>
<td>K</td>
<td>J</td>
<td>38.1 x 12.7 (1.5 x 0.495) bronze roller</td>
<td></td>
</tr>
<tr>
<td>Slow acting, 2NC/2NO</td>
<td>41</td>
<td>Slow acting, 2NC/2NO</td>
<td>L</td>
<td>K</td>
<td>50.5 x 12.7 (2 x 0.495) bronze roller</td>
<td></td>
</tr>
<tr>
<td>Slow acting, 4NC, gold</td>
<td>42</td>
<td>Slow acting, 4NC, gold</td>
<td>M</td>
<td>L</td>
<td>25.4 x 12.7 (1 x 0.5) nylon roller</td>
<td></td>
</tr>
<tr>
<td>Snap action, 1NC/1NO, gold</td>
<td>43</td>
<td>Slow acting, 2NC/2NO, gold</td>
<td>N</td>
<td>M</td>
<td>38.1 x 12.7 (1.5 x 0.25) bronze roller</td>
<td></td>
</tr>
<tr>
<td>Snap action, 2NC/2NO, gold</td>
<td>44</td>
<td>Slow acting, 2NC/2NO, gold</td>
<td>O</td>
<td>N</td>
<td>19 x 6.35 (0.75 x 0.25) bronze roller</td>
<td></td>
</tr>
<tr>
<td>Snap action, 2NC/2NO</td>
<td>45</td>
<td>Slow acting, 2NC/2NO</td>
<td>P</td>
<td>O</td>
<td>38.1 x 12.7 (1.5 x 0.5) nylon roller</td>
<td></td>
</tr>
<tr>
<td>Snap action, 2NC/2NO</td>
<td>46</td>
<td>Slow acting, 2NC/2NO</td>
<td>Q</td>
<td>P</td>
<td>50.5 x 12.7 (2 x 0.5) nylon roller</td>
<td></td>
</tr>
<tr>
<td>Snap action, 3NC/1NO</td>
<td>47</td>
<td>Slow acting, 3NC/1NO</td>
<td>R</td>
<td>Q</td>
<td>25.4 x 12.7 (1 x 0.5) nylon roller</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
(1) Not all possible combinations are available; these are only guidelines.
MICRO SWITCH™ GSX Series

Figure 1. Side rotary head with standard roller

Figure 2. Pin plunger

Figure 3. Top roller plunger

Figure 4. Top roller lever
## ORDER GUIDE

<table>
<thead>
<tr>
<th>Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSXA42A1E</td>
<td>0.5 in NPT housing 2NC/1NO side rotary Ø 0.75 in x 0.25 in bronze roller</td>
</tr>
<tr>
<td>GSXA42B</td>
<td>0.5 in NPT housing 2NC/1NO pin plunger</td>
</tr>
<tr>
<td>GSXA42C</td>
<td>0.5 in NPT housing 2NC/1NO top roller plunger</td>
</tr>
<tr>
<td>GSXA42D</td>
<td>0.5 in NPT housing 2NC/1NO top roller lever</td>
</tr>
<tr>
<td>GSXA46A1E</td>
<td>0.5 in NPT housing 3NC/1NO side rotary Ø 0.75 in x 0.25 in bronze roller</td>
</tr>
<tr>
<td>GSXA46B</td>
<td>0.5 in NPT housing 3NC/1NO pin plunger</td>
</tr>
<tr>
<td>GSXA46C</td>
<td>0.5 in NPT housing 3NC/1NO top roller plunger</td>
</tr>
<tr>
<td>GSXA46D</td>
<td>0.5 in NPT housing 3NC/1NO top roller lever</td>
</tr>
<tr>
<td>GSXC42A1E</td>
<td>20 mm housing 2NC/1NO side rotary Ø 0.75 in x 0.25 in bronze roller</td>
</tr>
<tr>
<td>GSXC42B</td>
<td>20 mm housing 2NC/1NO pin plunger</td>
</tr>
<tr>
<td>GSXC42C</td>
<td>20 mm housing 2NC/1NO top roller plunger</td>
</tr>
<tr>
<td>GSXC42D</td>
<td>20 mm housing 2NC/1NO top roller lever</td>
</tr>
<tr>
<td>GSXC46A1E</td>
<td>20 mm housing 3NC/1NO side rotary Ø 0.75 in x 0.25 in bronze roller</td>
</tr>
<tr>
<td>GSXC46B</td>
<td>20 mm housing 3NC/1NO pin plunger</td>
</tr>
<tr>
<td>GSXC46C</td>
<td>20 mm housing 3NC/1NO top roller plunger</td>
</tr>
<tr>
<td>GSXC46D</td>
<td>20 mm housing 3NC/1NO top roller lever</td>
</tr>
</tbody>
</table>

### WARNING

**MISUSE OF DOCUMENTATION**
- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

### WARNING

**RISK TO LIFE OR PROPERTY**

Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.

**Failure to comply with these instructions could result in death or serious injury.**

### WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

- **E-mail:** info.sc@honeywell.com
- **Internet:** www.honeywell.com/sensing
- **Phone and Fax:**
  - Asia Pacific: +65 6355-2828
  - +65 6445-3033 Fax
  - Europe: +44 (0) 1698 481481
  - +44 (0) 1698 481676 Fax
  - Latin America: +1-305-805-8188
  - +1-305-883-6257 Fax
  - USA/Canada: +1-800-537-6945
  - +1-815-235-6847
  - +1-815-235-6345 Fax

---

Sensing and Control
Honeywell
1985 Douglas Drive North
Golden Valley, Minnesota 55422
www.honeywell.com
24CE/924CE
Miniature Safety Electromechanical Switch

FEATURES
- Positive opening operation of Normally Closed contacts conforming to IEC/EN 60947-5-1-3
- Compact construction
- Pre-wired
- Die-cast Zinc housing
- Wide selection of actuators
- Cable length variations
- Side and bottom exit cable
- Simple two-screw mounting
- IP 65/66/67
- UL recognised; CSA certified (924CE), CE compliant, BG approved (24CE)

BENEFITS
- Suitable for applications where space is at a premium
- Fast and easy to install
- Suitable for difficult operating environments
- Application flexibility
- Enhanced choice for application
- Multiple plunger capability

The ranges 24CE and 924CE have been tested and approved to meet the requirements of the Low Voltage directive and positive opening safety contacts per IEC/EN 60947-5-1-3. The devices are CE marked. The red colour clearly differentiates this safety component in the application. The 924CE range also has UL and CSA approval.

It is possible for the end user to enhance the safety level of these switches from Category 1 per EN 954-1 on their own to Categories 2, 3 or 4 per EN 954-1 when the switches are used in conjunction with our wide range of FF-SR safety control modules to form a safety system.

Typical applications for these switches would use the roller plunger 24CE18 style in conjunction with cams on doors with hinges. Also available are a range of panel mounting or top mounting versions to ensure that small space or difficult mounting can be simply achieved.

Several contact arrangements are available.

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.
## 24CE Series

**Miniature Safety Electromechanical Switch**

### Technical Data

#### Mechanical life
- 10 million operations.

#### Degree of protection
- **24CE**
  - Standard type: IP 66
  - With boot seal type: IP 67

#### Temperature range
- **Operating:** 0 °C to +70 °C / 32 °F to +160 °F

#### Approvals*
- IEC 60947-5-1
- EN 60947-5-1
- ac15 B300
- dc13 R300

#### Electrical
- According to IEC/EN 60947-5-1.
- Rated insulation voltage $U_i = 500$ V.
- Rated impulse withstand voltage $U_{imp} = 2.5$ kV.
- Not suitable for isolation.
- SCPD, Quick blow fuse to IEC 127 suitable for rated current.

* See Standards (page 179)

#### Dimensions in mm / in

<table>
<thead>
<tr>
<th>Order</th>
<th>Pin Plunger (Boot Sealed)</th>
<th>Roller Plunger Parallel (Boot Sealed)</th>
<th>Roller Plunger Perpendicular (Boot Sealed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td><img src="#" alt="Pin Plunger Diagram" /></td>
<td><img src="#" alt="Roller Plunger Parallel Diagram" /></td>
<td><img src="#" alt="Roller Plunger Perpendicular Diagram" /></td>
</tr>
<tr>
<td>31</td>
<td><img src="#" alt="Pin Plunger Diagram" /></td>
<td><img src="#" alt="Roller Plunger Parallel Diagram" /></td>
<td><img src="#" alt="Roller Plunger Perpendicular Diagram" /></td>
</tr>
<tr>
<td>55</td>
<td><img src="#" alt="Pin Plunger Diagram" /></td>
<td><img src="#" alt="Roller Plunger Parallel Diagram" /></td>
<td><img src="#" alt="Roller Plunger Perpendicular Diagram" /></td>
</tr>
</tbody>
</table>

### Actuator Types

<table>
<thead>
<tr>
<th>Slow Action Contacts 1 Normally Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="#" alt="Actuator Diagram" /></td>
</tr>
</tbody>
</table>

#### Cable Type
- 3 or 5 x 0.75 mm² harmonised CENELEC cable.

### Ordering

**Example:** 24CE18-Y1A

* Industrial Safety Products*
### Slow Action Contacts

<table>
<thead>
<tr>
<th>Option Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

#### Break before make

<table>
<thead>
<tr>
<th>Cable Length (in metres)</th>
<th>Option Codes</th>
<th>Description</th>
</tr>
</thead>
</table>

#### Make before break

<table>
<thead>
<tr>
<th>Cable Length (in metres)</th>
<th>Option Codes</th>
<th>Description</th>
</tr>
</thead>
</table>

### Option Codes Available

- **A**: Side Exit Cable.

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

Specify cable length in 1 metre increments e.g.

- 1 = 1 metre
- 2 = 2 metre etc.

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

Specify cable length in 1 metre increments e.g.

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### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

Specify cable length in 1 metre increments e.g.

- 1 = 1 metre
- 2 = 2 metre etc.

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

Specify cable length in 1 metre increments e.g.

- 1 = 1 metre
- 2 = 2 metre etc.

### Slow Action Contacts

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.P. 1</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>O.P. 2</td>
<td>Normally Open</td>
</tr>
</tbody>
</table>

### Cable Length

Specify cable length in 1 metre increments e.g.

- 1 = 1 metre
- 2 = 2 metre etc.
924CE Series
Miniature Safety Electromechanical Switch

Technical Data

**Mechanical life**
- 10 million operations.

**Degree of protection**
- 924CE
- Standard type: IP 66
- With boot seal type: IP 67

**Temperature range**
- Operating: 0 °C to +105 °C / 32 °F to +221 °F

**Approvals**
- IEC 60947-5-1
- EN 60947-5-1
- ac15 B300
- dc13 R300
- UL, CSA

**Electrical**
- According to IEC/EN 60947-5-1.
- Rated insulation voltage
  - Ui = 500 V.
- Rated impulse withstand voltage
  - Uimp = 2.5 kV.
- Not suitable for isolation.
- SCPD, Quick blow fuse to IEC 127 suitable for rated current.

* See Standards (page 179)

Dimensions in mm / in

Cable Type
- 3 or 5 x 18 AWG SJT0 CABLE

Ordering:

**Example:** 924CE18-Y3A

---

### Actuator Types

<table>
<thead>
<tr>
<th>Pin Plunger (Boot Sealed)</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller Plunger Parallel (Boot Sealed)</td>
<td>31</td>
</tr>
<tr>
<td>Roller Plunger Perpendicular (Boot Sealed)</td>
<td>55</td>
</tr>
</tbody>
</table>

### Slow Action Contacts

1 Normally Closed

- **black** (Circuit closed)
- **red**
- **green**

<table>
<thead>
<tr>
<th>17.1 +/- 0.4</th>
<th>PT = 2.2 max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.1 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>29.9 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>25.9 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>29.9 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>25.9 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>23.9 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>19.9 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>23.9 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>31.7 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>35.7 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>31.7 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
<tr>
<td>35.7 +/- 0.4</td>
<td>PT = 2.2 max.</td>
</tr>
<tr>
<td>31.7 *</td>
<td>O.F (max.) = 22.5 Newtons / 2300 GMF</td>
</tr>
</tbody>
</table>

---

*Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 256-9200-www.stevenengineering.com*
Specify cable length in 3 feet increments e.g. 3 = 3 feet 6 = 6 feet etc.

A: Side Exit Cable
FFS Series
Electronic Standalone Non-Contact Safety Switch

DESCRIPTION
Honeywell FFS series are designed as tamper-proof, standalone safety switches that can often be used to switch relays, contacts, or safety relays directly. By removing the separate control unit, Honeywell has made it possible to use its electronic switching technology in smaller, simpler safety systems.

The FSS is often suitable for use on its own, for lower category safety systems, providing two volt-free outputs (2NC or 1NC/1NO). It can be used in conjunction with safety relays where a higher category of performance is required. For ease of operation, the fixed switch has a green LED, giving true indication of FFS safety switch contacts.

FEATURES
- Tamper-proof electronic switching
- IP67
- 7 mm to 10 mm [0.28 in to 0.4 in] operating distance
- Guard status indication
- CE, UL approvals

POTENTIAL APPLICATIONS
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicron equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery
FFS Series

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>FFS-11-03</th>
<th>FFS-20-03</th>
<th>FFS-11-QD</th>
<th>FFS-20-QD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact arrangement</td>
<td>Max: 1NC safety and 1NO auxiliary</td>
<td>Max: 2NC safety</td>
<td>Max: 1NC safety and 1NO auxiliary</td>
<td>Max: 2NC safety</td>
</tr>
<tr>
<td>Safety contact rating</td>
<td>230 Vac/2 A 30 Vdc/2 A</td>
<td>230 Vac/2 A 30 Vdc/2 A</td>
<td>230 Vac/2 A 30 Vdc/2 A</td>
<td>230 Vac/2 A 30 Vdc/2 A</td>
</tr>
<tr>
<td>Safety contact operating distance</td>
<td>7 mm [0.28 in] ON; 12 mm [0.47 in] OFF</td>
<td>7 mm [0.28 in] ON; 12 mm [0.47 in] OFF</td>
<td>7 mm [0.28 in] ON; 12 mm [0.47 in] OFF</td>
<td>7 mm [0.28 in] ON; 12 mm [0.47 in] OFF</td>
</tr>
<tr>
<td>Safety contact close/drop/bounce</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
</tr>
<tr>
<td>Auxiliary contact rating</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary contact operating distance</td>
<td>7 mm [0.28 in] OFF; 12 mm [0.47 in] ON</td>
<td>7 mm [0.28 in] OFF; 12 mm [0.47 in] ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary contact close/drop/bounce</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal fuse</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>External fuse (customer supplied)</td>
<td>3 A/230 Vac, 1 A/30 Vdc</td>
<td>3 A/230 Vac, 1 A/30 Vdc</td>
<td>3 A/230 Vac, 1 A/30 Vdc</td>
<td>3 A/230 Vac, 1 A/30 Vdc</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
<td>24 Vdc</td>
</tr>
<tr>
<td>Vibration/shock</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
</tr>
<tr>
<td>Mounting and fixture</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
</tr>
<tr>
<td>Construction</td>
<td>Blue ABS resin filled</td>
<td>Blue ABS resin filled</td>
<td>Blue ABS resin filled</td>
<td>Blue ABS resin filled</td>
</tr>
</tbody>
</table>

FFS CONTACTS

Contact configurations show under closed condition for guard device.

FFS CONNECTIONS

FFS PRE-WIRED CONNECTIONS

<table>
<thead>
<tr>
<th>FFS-20-03</th>
<th>FFS-11-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Grey</td>
<td>Grey</td>
</tr>
</tbody>
</table>

FFS QUICK CONNECT CONNECTIONS

<table>
<thead>
<tr>
<th>FFS-20-QD</th>
<th>FFS-11-QD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>Grey</td>
<td>Grey</td>
</tr>
</tbody>
</table>
Electronic Standalone Non-Contact Safety Switch

DIMENSIONS

<table>
<thead>
<tr>
<th>FFS PRE-WIRED mm[in]</th>
<th>FFS QUICK CONNECT mm[in]</th>
</tr>
</thead>
</table>

ORDER GUIDE

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFS-20-03</td>
<td>Safety switch and actuator, 2NC, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FFS-11-03</td>
<td>Safety switch and actuator, 1NC/1NO, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FFS-20-QD</td>
<td>Safety switch and actuator, 2NC, dc, M12 Brad Harrison connector, no cable</td>
</tr>
<tr>
<td>FFS-11-QD</td>
<td>Safety switch and actuator, 1NC/1NO, dc, M12 Brad Harrison connector, no cable</td>
</tr>
<tr>
<td>FFS-20-QD05</td>
<td>Safety switch and actuator, 2NC, dc, 5 m cable, M12 Brad Harrison connector</td>
</tr>
<tr>
<td>FFS-11-QD05</td>
<td>Safety switch and actuator, 1NC/1NO, dc, 5 m cable, M12 Brad Harrison connector</td>
</tr>
<tr>
<td>FFS-20-10</td>
<td>Safety switch and actuator, 2NC, dc, 10 m pre-wired</td>
</tr>
<tr>
<td>FFS-11-10</td>
<td>Safety switch and actuator, 1NC/1NO, dc, 10 m pre-wired</td>
</tr>
</tbody>
</table>


WARNING
RISK TO LIFE OR PROPERTY
Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.
Failure to comply with these instructions could result in death or serious injury.

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.

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              +65 6445-3033 Fax
Europe      +44 (0) 1698 481481
              +44 (0) 1698 481676 Fax
Latin America +1-305-805-8188
              +1-305-883-8257 Fax
USA/Canada  +1-800-537-6945
              +1-815-235-6847
              +1-815-235-6545 Fax

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Golden Valley, MN 55422
www.honeywell.com

Honeywell

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CLS Series
(Cable Pull Safety Switch)

FEATURES
- Red body colour
- Single and Dual Head
- Single Head explosion-proof version
- Conformance to IEC 60947-5-1, EN 60947-5-1 (low voltage), EN 418
- Multiple conduit entry/exit points
- Simple set-up
- Temperature stabiliser spring
- Cable pulled - latch - manual reset
- Broken/slackened cable detection
- Up to 4NC positive opening contacts
- Status indication
- Compact design
- Complete accessories packs
- Connectorised versions available upon request

BENEFITS
- Flexible range of options
- Easy wiring options
- Cost reduced set up time
- Minimal re-adjustment due to cable expansion or contraction
- All cable modes detected (under tension, pulled or broken/slackened)
- Wiring and indication flexibility
- Tripped switch visible from a distance
- Fits simply to available mounting locations on most conveyors

The CLS range of cable (rope) pull switches is designed to provide the conveyor OEM and end user with a cost effective yet robust and simple to set up emergency stop device to protect an exposed conveyor.

The design was developed in the USA in association with some of the world’s leading conveyor OEMs. The product and design features of the CLS are the result of the close relationship with these OEMs.

The device is simple to install:
- bring the cable up to tension (using a simple line indicator on the switch)
- actuate and reset the cable (rope) firmly several times (to seat the cable)
- re-adjust tension
...and the switch is ready for use.

Large distribution warehouses are becoming common throughout the world. Conveyors are the connecting transport network through these warehouses. When a CLS is actuated it stops the protected conveyor, ensuring operator safety. This shutdown, however, stops the protected conveyor, causing congestion and delays throughout the rest of the network. The CLS reduces these delays by offering rapid diagnosis via a powerful 6W indicator which is visible from a distance. The tripped device can be quickly located and reset so that the conveyors may be restarted and costly down time minimised.

The CLSX explosion-proof cable pull limit switch is specifically designed to provide emergency stop protection in hazardous atmospheres. It withstands the pressure of an internal explosion and cools the exploding gases below the kindling temperature of the explosive atmosphere. Flame paths are provided by the cover housing threads and an extended plunger between the switch cavity and head. The CLSX satisfies NEMA 7, 9 standards and is UL listed and CSA certified for Class I, Div. 1, Groups B, C, and D; Class II, Div. 1, Groups E, F, and G. The CLSX is designed to meet the requirements of EN50014 and EN50018; certification is pending.
CLS - Metal Body Single Head Cable Pull Safety Switch

Technical Data

- **Mechanical life**: 25,000 operations maximum
- **Degree of protection**: IP 67
- **Temperature range**: Operating: -1 to +70°C (30 to 158°F)
- **Approvals and Compliance**: IEC/EN 60947-5-1 and EN 418
- **Emergency stop device, UL listed, CSA certified, CE marked.**

**Operating rating**
- AC15: U = 600V, I = 1.2A
- U = 240V, I = 3A
- U = 120V, I = 6A
- DC13: U = 250V, I = 0.27A
- U = 24V, I = 2.8A

**Directives**
- The forced disconnect mechanism on normally closed contacts conforms to IEC 60947-5-1-3. This product complies with the Machinery Directive 98/37/EC and complies with EN 60947-5-1.

* See Standards (page 161)

**Switch Type**

- Slow acting, break before make (BBM), 1 Normally Closed/1 Normally Open

**Switch Type 9 Body**

Conduit Thread

- **A** = PG 13.5
- **B** = 1/2" NPT
- **C** = 20 mm
- **D** = PF 1/2"

Ordering:

Example: CLSA4T-3

---

* Industrial Safety Products *
### Head Code

<table>
<thead>
<tr>
<th>Head Code</th>
<th>Modification Code for Contact Configuration When Using a 4 Circuit Slow Acting (Switch Type 9) Only</th>
<th>Modification Code for Indicator Type When Using a 4 Circuit Slow Acting (Switch Type 9) Only</th>
<th>Modification Code for Head Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Normally Closed</td>
<td>240 V neon</td>
<td>Head assembled with actuator to the left</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Diagram A" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Normally Closed/1 Normally Open</td>
<td>120 V neon</td>
<td>Head assembled with actuator to the front</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Diagram B" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Normally Closed/2 Normally Open</td>
<td>24 V LED</td>
<td>Head assembled with actuator facing to the back</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Diagram T" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Required for Switch Type 9. Leave the modification code blank for other switch types.

Note: Leave the modification code blank if no indicator is needed with Switch Type 9.

Note: Leave the modification code blank if not required. Standard head orientation is with actuator to the right. Unit may be field modified to adjust head orientation.

---

Note: • Standard head orientation is with actuator to the right

• Unit may be field modified to adjust head orientation
CLSX - Metal Body Explosion-proof Cable Pull Safety Switch

Technical Data

Mechanical life: 25,000 operations maximum
Degree of protection: NEMA/UL 1, 3, 4, 7, 9 and 13
Temperature range: Operating: -1 to +70°C (30 to 158°F)
Approvals and standards:
- IEC/EN 60947-5-1 and EN 418
- Emergency stop device, UL listed, CSA certified:
  - Class I, Div. 1, Groups B, C, D
  - Class II, Div. 1, Groups E, F, G

Operating rating:
- AC15: U = 600V: I = 1.2A
  U = 240V: I = 3A
  U = 120V: I = 6A
- DC13: U = 250V: I = 0.27A
  U = 24V: I = 2.8A

Directives and Compliance:
- The forced disconnect mechanism on normally closed contacts conforms to IEC 60947-5-1-3. This product complies with the Machinery Directive 98/37/EC and complies with EN 60947-5-1.

Switch Type

- Slow acting, break before make (BBM), 1 Normally Closed, 1 Normally Open
- Direct Acting, 2 Normally Closed
- 4 Circuit Slow Acting

Ordering:

Example: CLSX9T-B

Conduit Thread

A = PG 13.5
B = 1/2" NPT
C = 20 mm
D = PF 1/2"

Courtesy of Steven Engineering, Inc.
230 Ryan Way, South San Francisco, CA, 94080-6370
Main Office: (650) 588-9200
Outside Local Area: (800) 258-9200
www.stevenengineering.com
<table>
<thead>
<tr>
<th>Head Code</th>
<th>Modification Code for Contact Configuration When Using a 4 Circuit Slow Acting (Switch Type 9) Only</th>
<th>Modification Code for Head Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 Normally Closed</td>
<td>Head assembled with actuator to the left</td>
</tr>
<tr>
<td>B</td>
<td>3 Normally Closed/ 1 Normally Open</td>
<td>Head assembled with actuator to the front</td>
</tr>
<tr>
<td>E</td>
<td>2 Normally Closed/ 2 Normally Open</td>
<td>Head assembled with actuator facing to the back</td>
</tr>
</tbody>
</table>

Note: Required for Switch Type 9. Leave the modification code blank for other switch types.

Note: Leave the modification code blank if not required. Standard head orientation is with actuator to the right. Unit may be field modified to adjust head orientation.

Note: Standard head orientation is with actuator to the right. Unit may be field modified to adjust head orientation.
2CLS - Metal Body Dual Head Cable Pull Safety Switch

Technical Data

- Mechanical life: 25,000 operations maximum
- Degree of protection: IP 67, NEMA/UL type 1, 3, 4 and 13
- Temperature range: Operating: -1 to +70 °C (30 to 158 °F)
- Approvals and standards: IEC/EN 60947-5-1 and EN 418, Emergency stop device, UL listed, CSA certified, CE marked.
- Operating rating:
  - AC15: U = 600V, I = 1.2A
  - U = 240V, I = 3A
  - U = 120V, I = 6A
  - DC13: U = 250V, I = 0.27A
  - U = 24V, I = 2.8A

Directives and Compliance

- The forced disconnect mechanism on normally closed contacts conforms to IEC 60947-5-1-3.
- This product complies with the Machinery Directive 98/37/EC and complies with EN 60947-5-1.

* See Standards (page 161)

Ordering:

Example: 2CLSA1T1

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>= PG 13.5</td>
<td>= 1/2&quot; NPT</td>
<td>= 20 mm</td>
<td>= PF 1/2&quot;</td>
</tr>
</tbody>
</table>

Conduit Thread

- 2X 144.8
- 2X 152.4
- 2X 118.8
- 2X 8.8
- 2X 5.9
- 2X 5.9
- 2X 3.9
- 2X 2.15
- 2X 2.15
- 2X 3.5
- 2X 1.62
- 2X 1.62

Example: 2CLS1X1T1

- Industrial Safety Products -

Primary Switch Type

Located on left hand side of switch body

Slow Acting, 2 Normally Closed

1 Normally Closed/

1 Normally Open

2 Normally Closed

Example: 2CLSA1T1

- Industrial Safety Products -

2CL/CLSX/2CLS Series
<table>
<thead>
<tr>
<th>Head Code</th>
<th>Auxiliary Switch Type Located on right hand side of switch body</th>
<th>Indicator Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow Acting 1 Normally Closed/1 Normally Open</td>
<td>120V – 6W incandescent Red Pilot Light</td>
<td><strong>A</strong></td>
</tr>
<tr>
<td>Slow Acting 2 Normally Closed</td>
<td>120V Neon Indicator</td>
<td><strong>B</strong></td>
</tr>
<tr>
<td>No switch</td>
<td>240V Neon Indicator</td>
<td><strong>C</strong></td>
</tr>
<tr>
<td></td>
<td>24V LED Indicator</td>
<td><strong>D</strong></td>
</tr>
<tr>
<td></td>
<td>Leave the Indicator Code blank if indicator is not required.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- **CLS/CLSX/2CLS Series**
- **CLS/CLSX/2CLS Series**
- **Industrial Safety Products**

Courtesy of Steven Engineering, Inc. • 230 Ryan Way, South San Francisco, CA, 94080-6370 • (650) 588-9200 • www.stevenengineering.com
Installation hardware

- Aircraft cable precut to 7.5 m (25 ft.), 15 m (50 ft.), 30 m (100 ft.), 45 m (150 ft.), 60 m (200 ft.).
- End springs for long cable spans to compensate for temperature variations
- Installation hardware kit CLSZ00 supports cable installations of up to 15 m (50 ft.)

Installation hardware order guide

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLSZC1</td>
<td>7.5 m Red Aircraft Cable, finished cable dia. 4.75 mm (0.187 in)</td>
</tr>
<tr>
<td>CLSZC2</td>
<td>15 m Red Aircraft Cable, finished cable dia. 4.75 mm (0.187 in)</td>
</tr>
<tr>
<td>CLSZC3</td>
<td>30 m Red Aircraft Cable, finished cable dia. 4.75 mm (0.187 in)</td>
</tr>
<tr>
<td>CLSZC4</td>
<td>45 m Red Aircraft Cable, finished cable dia. 4.75 mm (0.187 in)</td>
</tr>
<tr>
<td>CLSZC5</td>
<td>60 m Red Aircraft Cable, finished cable dia. 4.75 mm (0.187 in)</td>
</tr>
<tr>
<td>CLSZ1S</td>
<td>End Spring</td>
</tr>
<tr>
<td>CLSZ00</td>
<td>Installation Kit, includes: 4 - thimbles, 8 - wire rope clamps, 1 - turnbuckle (w/lock nuts), 9 - eyebolts (w/hardware), 1 - end spring, 1 conduit fitting</td>
</tr>
</tbody>
</table>

Notes:
1. CLS/CLSX includes 1 turnbuckle and 1 end spring.
2. 2CLS includes 2 turnbuckles and 2 end springs.
CPS Series
Cable Pull Safety Switch

FEATURES
- Direct opening action of NC (normally closed) contacts
- 2CPS: 2NO/2NC, 1NO/3NC or 4NC contact configurations
  1CPS: 1NO/1NC, 2NO/2NC, 1NO/3NC or 4NC contact configurations
- Typical cable span of 76 m (250 ft) in an environment with a temperature change of ±17 °C (±30 °F). Longer spans are possible depending upon temperature change and installation (ref. note on page 6 for more details or Application note - Effect of Temperature on Cable Pull Switch Operation)
- Choice of three actuator configurations (2CPS)
- Removable contact block version available (2CPS)
- Large wiring cavity with straight-through wiring
- 24 Vdc or 120 Vac bright, multicluster LED status indicator light available on 2CPS. Single high intensity LED on 1CPS
- Gold-plated contacts are standard on 2CPS, available on 1CPS
- Die-cast zinc housing
- Optional hardware packs available

TYPICAL APPLICATIONS
- Long conveyor systems found in warehouses and distribution centers
- Conveyor systems having a high amount of vibration
- Conveyor systems that experience wide temperature swings
- Long conveyor systems where easy through wiring, or highly visible trip status is required
- Hose down conditions
- Packaging equipment
- Assembly lines

CPS Series Cable Pull Safety Switches provide a readily accessible emergency stop signal. This is a cost-effective means compared to using multiple emergency stop push-buttons. (Cable Pull Safety Switches are not, however, to be used as a means of personnel safeguarding. They may be used to prevent further injury or damage to equipment when used for emergency stop signaling.)

The CPS Series Cable Pull Safety switch is designed to provide emergency stop protection for exposed conveyor and assembly lines. The internal mechanism latches on both slackened cable (push) and pulled cable. This capability also enhances productivity by eliminating nuisance stops due to variations in temperature, stretch of cable over time, and other application variables.

The 1CPS is intended for use in applications where the cable span is 76 m (250 ft) or shorter. It is an economical solution for shorter runs or zone protection typical to automated systems. The 2CPS series is intended for use in very long cable runs of 152 m (500 ft) or shorter, such as long conveyor lines found in warehouses.

A line in the midpoint of the cable tension window indicates proper cable tension, providing easy set-up. The direct opening switch contacts are held closed when the actuating cable is under proper tension and the reset knob is set to RUN. When the actuating cable is pulled, slackened or broken, a cam positively opens the NC (Normally Closed) switch contacts. The snap action, trip operation causes the switch contacts to change state and mechanically latch almost simultaneously when the cable is pulled, slackened or broken. The NC switch contacts remain open until the CPS is reset by properly tensioning the cable and manually rotating the reset knob.

When the direct opening switch contacts open, the auxiliary contacts also actuate (open contacts close and closed contacts open). The auxiliary contacts are electrically isolated from the direct opening switch contacts. These NO (Normally Open) contacts may be used for monitoring or signaling.

The CPS complies with: Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC; Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function; IEC/EN 60947-1; IEC/EN 60947-5-1; IEC/EN 60947-5-5.

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.
1CPS
Cable Pull Safety Switch

**Technical Data**

- **Mechanical life**: 1 000 000 operations
- **Degree of protection**: IP 67, NEMA 1, 4, 12, 13
- **Temperature range**: Operating: -25 °C to +80 °C / -13 °F to +176 °F without condensation
- **Approvals**: IEC/EN 60947-1, IEC/EN 60947-5-1, IEC/EN 60947-5-5, AC15 A300, DC13 Q300, UL & CSA, BG Applied for
- **Vibration**: 10 Hz - 500 Hz, 5 g
- **Shock**: 15 g
- **Contact material**: Silver standard, Gold plated optional
- **Included accessories**: None

**Ordering:**

Example: 1CPSA1A

---

**Diagram:**

- **1 NORMALLY CLOSED / 1 NORMALLY OPEN**
- **2 NORMALLY CLOSED / 2 NORMALLY OPEN**

---

**Conduit Thread**

- **A** = 1/2" NPT
- **C** = 20 mm

**Gold-plated contacts**

- 5
- 6
3 NORMALLY CLOSED/ 1 NORMALLY OPEN

4 NORMALLY CLOSED

Indicator-Pilot Light Code

A : 24 V LED

B : 120 V LED
2CPS
Cable Pull Safety Switch

Technical Data

Mechanical life 1 000 000 operations

Degree of protection IP 67

Temperature range Operating: -40 °C to +80 °C /
-40 °F to +176 °F

without condensation

Approval
IEC/EN 60947-1
IEC/EN 60947-5-1
IEC/EN 60947-5-5
AC15 A300
DC13 Q300
UL & CSA
BG

Vibration 10 Hz - 500 Hz, 5 g

Shock 15 g

Contact material Gold plate over silver

Included accessories Turnbuckle(s)

Contact blocks mounted to housing

Conduit Thread Contact block mounting
1/2" NPT = A 1 = to housing
20 mm = C 2 = removable with heavy duty terminals

Ordering:

Example: 2CPSA1A2B

© Honeywell International Inc. - April 2003
4 NORMALLY CLOSED

Actuation Code

1: Maintained both sides
2: Maintained left side, no actuation right side
3: Maintained right side, no actuation left side

Indicator Light Code

1: No letter: no indicator provided
2: 24 Vdc red multi-cluster LED
3: 120 Vac red multi-cluster LED

Removable contact blocks with heavy duty wiring receptacles

#6-32 UNC
Temperature-Span Distance Application Information

Cable Pull Switches featuring broken cable detection require pre-tensioning in order to enable the RUN condition.

The relative expansion or contraction of the steel actuating cable when the ambient temperature increases or decreases must be taken into account when pre-tensioning a cable pull switch.

The change in cable length with change in temperature can cause significant nuisance shut downs on longer runs.

Install the system when the temperature is at the mid point of the extremes. If a warehouse has a low temperature of 15,6 °C (60 °F) and a high of 32,2 °C (90 °F), set up the system at the midpoint 23,9 °C (75 °F).

Use an endspring or another CPS at the opposite end of the cable span to double the temperature tolerance and to meet the requirements of EN 418.

| A = Total temperature variation |
| B = Setup point - Ideally at middle of temperature extremes |
| C = Cable Pull Switch usable temperature span without endspring or second CPS |
| D = Cable Pull Switch usable temperature span with endspring or second CPS |
| E = Cable span distance |
Application information

1CPS

- 0.46 m [18 in] maximum
- 2.4 m [8 ft] maximum
- 76 m [250 ft] typical
- Reset knob

E - Tension indicator line is in center of indicator window – cable is properly tensioned

F - J-hook turnbuckle

G - Thimble

D - J-hook turnbuckle (included)

A 46 cm [18 in] maximum

B 2.4 m [8 ft] maximum

C 76 m [250 ft] typical

D - J-hook turnbuckle (included)

E - Thimble

F - Cable clamp

G - Cable support

H - Endspring

I - Tension indicator line is in center of indicator window – right cable is properly tensioned

J - Reset knob

K - Tension indicator line is in center of indicator window – left cable is properly tensioned

L - Thimble

M - Cable clamp

N - Cable

2CPS
## Hardware packets (available separately)

<table>
<thead>
<tr>
<th>Listing</th>
<th>Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLSZC1</td>
<td>Cable - 7.6 m (25 ft) length</td>
</tr>
<tr>
<td>CLSZC2</td>
<td>Cable - 15.2 m (50 ft) length</td>
</tr>
<tr>
<td>CLSZC3</td>
<td>Cable - 30.5 m (100 ft) length</td>
</tr>
<tr>
<td>CLSZC4</td>
<td>Cable - 45.7 m (150 ft) length</td>
</tr>
<tr>
<td>CLSZC5</td>
<td>Cable - 61 m (200 ft) length</td>
</tr>
<tr>
<td>CLSZC7</td>
<td>Cable - 76.2 m (250 ft) length</td>
</tr>
<tr>
<td>CLSZTC</td>
<td>(2) Thimbles</td>
</tr>
<tr>
<td></td>
<td>(2) Low-profile Duplex Cable Clamps</td>
</tr>
<tr>
<td>CPSZ1S</td>
<td>(1) Draw-bar Endspring</td>
</tr>
<tr>
<td>CPSZK1</td>
<td>(1) J-hook Turnbuckle with Lock Nuts</td>
</tr>
<tr>
<td></td>
<td>(2) Thimbles</td>
</tr>
<tr>
<td></td>
<td>(2) Low-profile Duplex Cable Clamps</td>
</tr>
<tr>
<td></td>
<td>(16) Sets of Cable Supports (16) 1/4-20 Eye Bolts, (32) 1/4-20 Nuts, (32) Flat Washers, (16) Lock Washers)</td>
</tr>
<tr>
<td>CPSLED24</td>
<td>Multicluster LED Accessory - 24 Vdc (conduit mount)</td>
</tr>
<tr>
<td>CPSLED120</td>
<td>Multicluster LED Accessory - 120 Vdc (conduit mount)</td>
</tr>
<tr>
<td>CPS-BRACKET</td>
<td>Mounting bracket (to be used with 1CPS or 2CPS)</td>
</tr>
<tr>
<td>CPSZTB</td>
<td>J-hook turnbuckle with lock nuts (included with 2CPS)</td>
</tr>
</tbody>
</table>

### CPSLED

![CPSLED Diagram](image)

- **A** Multi-LED red pilot light
- **B** 1/2-14 N.P.o.m Thread
- **C** 18 AWG red PVC insulation
- **D** 18 AWG black PVC insulation

### CPS-BRACKET

![CPS-BRACKET Diagram](image)
Mounting dimensions (mm/in)

1CPS

A Fully extended
B Optional indicator
C Conduit thread (3 total)
D Mounting pad (4 total)

2CPS

A Fully extended
B Optional indicator
C Conduit thread (3 total)
D Mounting pad (4 total)
Warranty and remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.

While we provide application assistance, personally, through our literature, as a guide to the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

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RDI Series
Residential Door Interlock Switch

DESCRIPTION
The RDI Series electromechanical door interlock is designed specifically for swing door applications, which may include residential elevators, dumbwaiters, and platform lifts. The door interlock holds the door in place and prevents it from being opened when not desired (e.g. the elevator/lift car is not present at the door). A number of design features contribute to increase safety, reduce nuisance stoppages and call-backs, and contribute to simplified wiring and installation.

Featuring a custom internal solenoid control, the RDI may reduce complexity of the host controller, reduce power consumption for a “greener” product, extend solenoid life and reduce solenoid “time outs,” reducing customer aggravation. Two Honeywell MICRO SWITCH™ switches are used to indicate door closure, providing an extra level of reliability.

Reliability and smooth operations are also enhanced by use of a metal key, which is less susceptible to bending and breakage. The lack of open or exposed contacts minimizes the possibility of owners making manual adjustments. Finally, the engagement of the key initiates electrical contact.

The snap-action cam mechanism requires less adjustment set-up time and reduces door movement that can cause nuisance shutdown. A Cat 5 connection option is available, simplifying installation. This door interlock is configurable and available in left- and right-hand versions, allowing for simplified customization. It is designed to be easy for the OEM to retrofit into their current design.

FEATURES
- Compliant to ASME A17.1 and UL 104
- Manual override for easy actuation without user hazard
- Two separate mechanical actions to indicate door closure
- Metal key
- Internal solenoid control
- No open or exposed contacts
- Key engagement minimizes nuisance stoppage
- Door closure retention cam to hold door with minimal key-to-interlock play
- Cat 5 connection available
- Configurable product platform
- Universal voltage for ac and dc applications
- 51.44 mm W x 247.65 mm H x 49.23 mm D [2.025 in W x 9.75 in H x 1.938 in D]

POTENTIAL APPLICATIONS
- Residential elevators
- Residential dumbwaiters
- Platform/vertical lifts

BENEFITS
- Meets required safety codes
- Reduces potential for call-backs
- Reliable performance and multiple design features to minimize nuisance stoppage of applications
- Simplified wiring and installation
- Reduced OEM design and manufacturing costs
- Stronger OEM sales message: increased safety, reduced owner aggravation, reduced power consumption
- Honeywell brand quality
### RDI Series

**DESIGN FEATURES**

- Terminal strip interface to PCB for quick and easy connection
- Custom solenoid design offers universal voltage for ac or dc applications
- Optional CAT 5 connector is available for customer electrical connection
- Honeywell DM door switch used to monitor door position (open/closed)
- Manual override feature as required by certain approval agencies
- Metal key engagement ensures door is held securely closed to reduce alignment issues/nuisance stoppage
- Two Honeywell SM basic switches controlling solenoid. Reduces complexity of host controller
- Honeywell reliable cam design provides positive snap action
- Die-cast metal enclosure using current Honeywell limit switch technology
- Product listings right or left hand installation

### PRODUCT LISTING

<table>
<thead>
<tr>
<th>Catalog Listings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDI-G-R</td>
<td>Right-hand door interlock</td>
</tr>
<tr>
<td>RDI-G-L</td>
<td>Left-hand door interlock</td>
</tr>
</tbody>
</table>
Door Interlock Switches

DIMENSIONS
WARNING

RISK TO LIFE OR PROPERTY
Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.

Failure to comply with these instructions could result in death or serious injury.

WARNING

MISUSE OF DOCUMENTATION
- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY
Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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001031-1-EN  IL50  GLO  Printed in USA
June 2009
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Relialign™ RDI2 Series
Residential Door Interlock Switch

DESCRIPTION
The Relialign™ Series electromechanical door interlock is designed specifically for swing door applications that include residential elevators, dumbwaiters, and platform lifts. The door interlock holds the door in place and prevents it from being opened when not desired (e.g. the elevator/lift car is not present at the door). A number of design features contribute to its enhanced safety, reduction of nuisance stoppages and call-backs, as well as simplified wiring and installation.

The Relialign™ RDI2 Series interlock features a rugged plastic molded housing. Featuring a custom internal solenoid control, Relialign™ interlock can reduce complexity of the host controller, trim down power consumption for a “greener” product, extend solenoid life and reduce solenoid “time outs,” lessening customer aggravation.

A Honeywell MICRO SWITCH™ switch is used to indicate door closure, providing an extra level of reliability.

Reliability and smooth operations are also enhanced by use of a metal key that is less susceptible to bending and breakage than plastic. The lack of open or exposed contacts minimizes the possibility of owners making manual adjustments. Finally, the engagement of the key initiates electrical contact.

The snap-action cam mechanism requires less adjustment setup time and reduces door movement that could lead to a nuisance shutdown. Connection options include a 6-pin terminal strip or a Cat 5 connector, simplifying installation. The Relialign™ Series is designed to be easy for the OEM to retrofit into their current design.

FEATURES
- Compliant to ASME A17.1, UL standard 104, and CSA-B44.1
- Manual override for easy actuation without user hazard
- Two separate mechanical actions to indicate door closure
- Rugged plastic molded housing
- Metal key
- Internal solenoid control
- No open or exposed contacts
- Key engagement minimizes nuisance stoppage
- Door closure retention cam to hold door with minimal key-to-interlock play
- Series or parallel wiring option for the door closed and door locked switches
- 6 pin terminal strip or Cat 5 connection options
- Configurable product platform
- Universal voltage for ac and dc applications
- 51,44 mm W x 273,05 mm H x 49,23 mm D
  [2.025 in W x 10.75 in H x 1.938 in D]

POTENTIAL APPLICATIONS
- Residential elevators
- Residential dumbwaiters
- Platform/vertical lifts

BENEFITS
- Meets required safety codes
- Reduced potential for call-backs
- Reliable performance and multiple design features to minimize nuisance stoppage of applications
- Simplified wiring and installation
- Reduced OEM design and manufacturing costs
- Strong OEM sales message: enhanced safety, reduced owner aggravation, reduced power consumption
- Honeywell brand quality
Relialign™ RDI2 Series

**DESIGN FEATURES**

Thermoplastic cover offers durability as well as an aesthetically appealing design.

MICRO SWITCH™ ZM switch used to indicate door locked when key rotates cam.

Custom solenoid design offers universal voltage for ac or dc applications.

MICRO SWITCH™ ZM switch used to monitor door closure. New design location harder to tamper or defeat.

6-pin terminal block or one-piece Cat 5 connection for quick and easy connection.

Manual override feature as required by certain approvals agencies.

New entry for wiring on backside of interlock helps keep wiring neat and out of sight.

MICRO SWITCH™ ZM switch controlling solenoid, reduces power consumption and complexity of host controller.

Honeywell’s reliable cam design provides positive snap action. New material provides more pull force.

Stainless steel key engagement holds the door securely closed to minimize alignment issues/huiscance stoppages.

**PRODUCT LISTING**

<table>
<thead>
<tr>
<th>Catalog Listings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDI2RBS2</td>
<td>Relialign™ Series door interlock, right-hand swing, ac/dc voltage, series wiring, Cat 5 connector</td>
</tr>
<tr>
<td>RDI2LBS2</td>
<td>Relialign™ Series door interlock, left-hand swing, ac/dc voltage, series wiring, Cat 5 connector</td>
</tr>
<tr>
<td>RDI2RBS1</td>
<td>Relialign™ Series door interlock, right-hand swing, ac/dc voltage, series wiring, 6-pin terminal strip connection</td>
</tr>
<tr>
<td>RDI2LBS1</td>
<td>Relialign™ Series door interlock, left-hand swing, ac/dc voltage, series wiring, 6-pin terminal strip connection</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GKZ91</td>
<td>Relialign™ Series replacement key</td>
</tr>
</tbody>
</table>
Door Interlock Switches

PRODUCT NOMENCLATURE

<table>
<thead>
<tr>
<th>RD12</th>
<th>R</th>
<th>B</th>
<th>S</th>
<th>2</th>
<th>___</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch type</td>
<td>Key-entry Position</td>
<td>Solenoid Type</td>
<td>Wiring Type</td>
<td>Connector Type</td>
<td>Specials</td>
</tr>
<tr>
<td>ReliAlign™ Series</td>
<td>R: Right</td>
<td>A: act</td>
<td>P: harness</td>
<td>1: 4-pin terminal strip</td>
<td>Two characters, letters or numbers to signify customer name or other unique features of the product not covered in the nomenclature. This field is not required.</td>
</tr>
<tr>
<td>Residential Door Interlock</td>
<td>L: Left</td>
<td>D: dec</td>
<td>S: safety</td>
<td>2: CoB (Custom)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B: add</td>
<td></td>
<td>3: Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not all combinations are possible.*

DIMENSIONS (inches)
WARNING
RISK TO LIFE OR PROPERTY
Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.
Failure to comply with these instructions could result in death or serious injury.

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY
Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge these items it finds defective. The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

SALES AND SERVICE
Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:
E-mail: info.sc@honeywell.com
Internet: www.honeywell.com/sensing
Phone and Fax:
Asia Pacific +65 6355-2828
+65 6445-3033 Fax
Europe +44 (0) 1698 481481
+44 (0) 1698 481676 Fax
Latin America +1-305-805-8188
+1-305-883-8257 Fax
USA/Canada +1-800-537-6945
+1-815-235-6847
+1-815-235-6545 Fax
Hall Effect Door Interrupt System
For the control of mechanical guards

FEATURES
- Equipment comprising a safety amplifier which can run up to 6 Hall Effect sensors triggered by coded magnet actuators
- Protective equipment in compliance with the essential requirements of the Machinery Directive 98/37/EC and with the technical requirements of the EN 954 standard for Type 3 safety related parts of control systems
- Solid state Hall Effect sensors and magnet actuators for reliability and long life.
- Tamper resistant coded sensors - Special magnet actuators
- Door misalignment monitoring and door chattering sensor (misalignment or vibration causes unit to lock off)
- Self-checking electronic processing with redundant output switching circuitries using two guided contact safety relays
- Sensors sealed to high pressure washdown

APPLICATIONS
Interlocking guard for non locked mechanical screens offering free access:
- Machine door or casing “open/closed” detection
- Guard-in-place detection, gate / access door detection
- Control of mechanical screens used in addition to a safety light curtain
- Food & Beverage, Packaging, Machine Tool, Automotive and Textile

The 50FY Series interlocking guard is a protective equipment comprising a safety amplifier accepting up to six Hall effect sensors operated by coded magnet actuators. This equipment allows to control up to 6 doors/casings of a machine or small production line. When all connected sensors are actuated, the logic circuit which controls the 2 output relays, closes the relay contacts to enable the machine operation. If any sensor is turned off (by opening a door), the logic circuit opens the contacts and the machine movement stops immediately.

Each sensor is equipped with 2 Hall effect integrated circuits. These Hall effect circuits are connected independently so that both must turn on simultaneously to produce an output. Each sensor is equipped with one N.O. output switching circuit and one N.C. output switching circuit in order to avoid common mode failure. An accurate positioning of the magnets is necessary to enable the machine operation, and the magnet actuators are coded. These two features make the 50FY series very difficult to defeat or to create a false closed door condition resulting in a more reliable system.

The Hall effect sensors and magnets are designed to be used in harsh duty. Sealed to IP 67, they meet washdown criteria for Food & Beverage Industry (high pressure 80 bars, high temperature 60 °C/140 °F and chemical washdown). Their corrosion resistant one-piece plastic housing survives exposure to metal cutting environments. Operating temperature is from -40 °C to 85 °C/-40 °F to 185 °F.

The 50FY series protective equipment is in compliance with the essential requirements of the Machinery Directive 98/37/EC and with the technical requirements of EN 954 standard for Type 3 safety related parts of control system.

The logic circuit is based on a permanent self-checking principle with redundancy. The N.O. contacts of the 2 output relays are internally connected in series. The two relays are cross monitored which guarantees a reliable connection to the machine control circuitry. The control unit must be installed in an IP 54 enclosure. Moreover, the access to the safety amplifier should be limited to the authorised personnel (the use of a special tool is recommended to secure the safety amplifier installation).

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.
### 50FY

- **Type 3 interlocking guard according to EN 954**
- **Monitor up to 6 doors**
- **Sensing distance up to 2.5 mm / 0.098 in. depending upon the offset adjustment**

#### Specifications

<table>
<thead>
<tr>
<th>Sensors and magnets</th>
<th>Amplifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>10-12 Vdc</td>
</tr>
<tr>
<td>Power consumption</td>
<td>20 mA</td>
</tr>
<tr>
<td>Output switching capacity</td>
<td>-</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Corrosion resistant plastic</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Sensors &amp; magnets: 12.7x39.4x33/0.50x1.55x1.30</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-40 to 85°C/-40 to 185°F</td>
</tr>
<tr>
<td><strong>Sealing</strong></td>
<td>IP 67 / NEMA 3, 4, 4X, 12, 13 and washdown</td>
</tr>
<tr>
<td><strong>Status indicators</strong></td>
<td>LED indicators on the amplifier</td>
</tr>
<tr>
<td><strong>Sensing distance</strong></td>
<td><em>2.5 mm/0.09 in. (offset: 0 mm)</em>&lt;br&gt;<em>1.3 mm/0.05 in. (offset: 3.8 mm/0.14 in.)</em>&lt;br&gt;<em>0 mm (offset: 7.5 mm/0.29 in.)</em></td>
</tr>
<tr>
<td><strong>Electrical connection</strong></td>
<td>4-leads prewired (2, 4 or 15 m/6.56, 13.12 or 49.2 ft)</td>
</tr>
</tbody>
</table>

#### Ordering Information

**Hall effect sensors:**
- 50FY41-6 (cable length 2 m / 6.56 ft)
- 50FY41-12 (cable length 4 m / 13.12 ft)
- 50FY41-50 (cable length 15 m / 49.2 ft)

**Magnet actuators:**
- 52FY31

**Safety amplifier:**
- FYQLA1-140R-3

#### Listing

- Safety amplifier: 50FY Series
- Hall effect sensors: 50FY41-2
- Magnet actuator: 52FY31

#### Offset/Sensing distance

<table>
<thead>
<tr>
<th>Offset</th>
<th>Sensing distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.5 mm/0.09 in.</td>
</tr>
<tr>
<td>3.8 mm/0.15 in.</td>
<td>1.3 mm/0.05 in.</td>
</tr>
<tr>
<td>7.5 mm/0.29 in.</td>
<td>0</td>
</tr>
</tbody>
</table>

(1) Order one set of sensor and magnet per door, and up to 6 sets per amplifier.

---

**Magnet actuator (52FY31)**

**Hall effect sensors (50FY41-2)**

**Safety amplifier**

---

Order one set of sensor and magnet per door, and up to 6 sets per amplifier.
**LED Status**

**Output Status**

**Machine operation**

- Normal operation
- Failure detection (or sensor misalignment detected)

**Sensor output status (red LEDs number 1 to 6)**

- Normal operation
- Improper operation

**Amplifier supply**

- Connect nominal voltage leads to the amplifier terminals labeled L1 (neutral) and L2 (phase).
- The NO output contact R1/R2 must be connected directly to the machine stop command or if necessary to an emergency stop module.

* Reset push-button to use only after control unit lock off when sensor misalignment detected.

** Internal switches FF-SRS935:

- S1: Without cross-fault monitoring
- S2: Manual restart
Category 1 Hall Effect Door Interrupt Proximity Sensors
2-Wire AC, 3-Wire DC types

FEATURES
• Sensors and actuators must be specifically aligned before sensors will produce outputs
• Special magnet actuators required to operate sensors, making unauthorized actuation difficult
• Solid state sensors for reliability and long life
• Sealed to IP 67, NEMA 4, 6, 6P, 13, meets washdown requirements
• LED output indicator
• Preleaded or connector style termination
• 10 to 30 Vdc supply voltage, PNP or NPN outputs
• 93 to 132 Vac supply voltage, N.O., SCR output
• -30 to +85 °C (-22 to +165 °F) temperature range (AC)
• -30 to +70 °C (-13 to +158 °F) (DC)
• Hard to defeat
• Standard and extended range magnetic actuators

The 40FY Series Hall Effect Door Interrupt Sensor is a non-contact, magnetic device consisting of two parts: a sensor and a magnetic actuator. The magnetic actuator has a keyed magnetic field that must match the sensor to operate correctly. When exposed to this keyed magnetic field, the sensor responds with an output. This product cannot be defeated by using an operator’s hand, non-magnetic metal, wire or tape and is hard to defeat with standard magnet/target actuator.
Category 1 Hall Effect Door Interrupt Proximity Sensors

2-Wire AC, 3-Wire DC types

Specifications

<table>
<thead>
<tr>
<th>Sensor Type</th>
<th>3-wire DC</th>
<th>2-wire AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensing Distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. Operate</td>
<td>6.35 mm</td>
<td>7.6 mm</td>
</tr>
<tr>
<td>(0.25 in.)</td>
<td>(0.30 in.)</td>
<td>(0.30 in.)</td>
</tr>
<tr>
<td>Max. Release</td>
<td>15.24 mm</td>
<td>19.05 mm</td>
</tr>
<tr>
<td>(0.60 in.)</td>
<td>(0.75 in.)</td>
<td>(0.75 in.)</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>10 to 30 Vdc</td>
<td>93 to 132 Vac</td>
</tr>
<tr>
<td>Load Current</td>
<td>0 to 200 mA</td>
<td>0 to 500 mA</td>
</tr>
<tr>
<td>Leakage Current</td>
<td>30 µA</td>
<td>1.5 mA max.</td>
</tr>
<tr>
<td>Voltage Drop, max.</td>
<td>PNP: 2.5 V</td>
<td>NPN: 1.5 V</td>
</tr>
<tr>
<td>(0.75 in.)</td>
<td>6 V @ 500 mA</td>
<td></td>
</tr>
<tr>
<td>Current Consumption, max.</td>
<td>40 mA</td>
<td>-</td>
</tr>
<tr>
<td>Inrush Current, max.</td>
<td>-</td>
<td>1.2 A/20 msec</td>
</tr>
<tr>
<td>Repeatability*</td>
<td>± 3 %</td>
<td>± 3 %</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30 to +85 °C</td>
<td>-25 to +70 °C</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP 67 (Dust tight, temporary immersion)</td>
<td>-</td>
</tr>
<tr>
<td>Materials</td>
<td>Housing: Polycarbonate; Cable: 22 gage PVC</td>
<td></td>
</tr>
<tr>
<td>Circuit Protection</td>
<td>Transients (power and output), incorrect wiring</td>
<td></td>
</tr>
</tbody>
</table>

* Repeatability is the ability of the sensor to trigger at the same point, plus or minus a given tolerance, after every operation (at constant voltage and temperature) over the entire range of the sensor’s specifications.

ELECTROMAGNETIC COMPATIBILITY

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Standard</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulse Voltage Withstand</td>
<td>IEC 255-5</td>
<td>1 KV</td>
</tr>
<tr>
<td>Radiated Electromagnetic Field Immunity</td>
<td>IEC 801-3</td>
<td>3 V/m</td>
</tr>
<tr>
<td>Discharge (ESD) Immunity Electrostatic</td>
<td>IEC 1000-4-2</td>
<td>8 KV</td>
</tr>
<tr>
<td>Fast Transient Immunity</td>
<td>IEC 1000-4-4</td>
<td>1 KV</td>
</tr>
<tr>
<td>Radiated Emissions</td>
<td>CISPR 11</td>
<td>within specified limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>within specified limits</td>
</tr>
</tbody>
</table>

MOUNTING REQUIREMENTS

SENSOR MUST FACE AND LINE UP PROPERLY IN BOTH AXES WITH ACTUATOR TO FUNCTION

- Industrial Safety Products -

40FY Series

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LEADWIRES COLOR CODE AND CONNECTOR PINOUT

3-wire DC NPN (Sinking)

3-wire DC PNP (Sourcing)

3-wire DC Pinout

2-wire AC Pinout

2-wire AC

FUSE

LOAD

L2 BLU

L1 BRN

93 - 132 VAC

L2

L1

NO CONNECTION

AC

L2

GND

L1

Wiring diagram:
The connection of two 40FY Hall effect sensors to the FF-SRS5935 emergency stop module increases the safety level of the whole installation.

NOTICE:
The cable resistance between terminals S11-S12 and S21-S22 must be less than 68 Ω for correct operation of the emergency stop module.
## Sensor order guide

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-wire DC, PNP N.O. output, connector</td>
<td>40FY26-33</td>
</tr>
<tr>
<td>3-wire DC, PNP N.C. output, connector</td>
<td>40FY22-33</td>
</tr>
<tr>
<td>3-wire DC, PNP N.O. output, leadwires</td>
<td>40FY26-020</td>
</tr>
<tr>
<td>3-wire DC, PNP N.C. output, leadwires</td>
<td>40FY22-020</td>
</tr>
<tr>
<td>3-wire DC, NPN N.O. output, connector</td>
<td>40FY28-33</td>
</tr>
<tr>
<td>3-wire DC, NPN N.C. output, connector</td>
<td>40FY24-33</td>
</tr>
<tr>
<td>3-wire DC, NPN N.O. output, leadwires</td>
<td>40FY28-020</td>
</tr>
<tr>
<td>3-wire DC, NPN N.C. output, leadwires</td>
<td>40FY24-020</td>
</tr>
<tr>
<td>2-wire AC, N.O. output, connector</td>
<td>40FY36-33</td>
</tr>
<tr>
<td>2-wire AC, N.C. output, connector</td>
<td>40FY32-33</td>
</tr>
<tr>
<td>2-wire AC, N.O. output, leadwires</td>
<td>40FY36-020</td>
</tr>
<tr>
<td>2-wire AC, N.C. output, leadwires</td>
<td>40FY32-020</td>
</tr>
<tr>
<td>Magnet actuator</td>
<td>41FY1</td>
</tr>
<tr>
<td>Magnet actuator, extended range</td>
<td>41FY2</td>
</tr>
</tbody>
</table>

## Cables for connector versions

### 4-Pin DC Standard Key (12 mm/0.47 in. Micro)

<table>
<thead>
<tr>
<th>Style</th>
<th>Cable Length</th>
<th>Catalog Listings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>2m (6.66 ft)</td>
<td>803000A09M020</td>
</tr>
<tr>
<td></td>
<td>5m (16.4 ft)</td>
<td>803000A09M050</td>
</tr>
<tr>
<td>Right Angle</td>
<td>2m (6.66 ft)</td>
<td>803001A09M020</td>
</tr>
<tr>
<td></td>
<td>5m (16.4 ft)</td>
<td>803001A09M050</td>
</tr>
<tr>
<td>Right Angle w/LED, NPN</td>
<td>2m (6.66 ft)</td>
<td>8030N1A09M020</td>
</tr>
<tr>
<td></td>
<td>5m (16.4 ft)</td>
<td>8030N1A09M050</td>
</tr>
</tbody>
</table>

### 4-Pin AC Inverted Key (12 mm/0.47 in. Micro)

<table>
<thead>
<tr>
<th>Style</th>
<th>Cable Length</th>
<th>Catalog Listings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>2m (6.66 ft)</td>
<td>B03000A11M020</td>
</tr>
<tr>
<td></td>
<td>5m (16.4 ft)</td>
<td>B03000A11M050</td>
</tr>
<tr>
<td>Right angle</td>
<td>2m (6.66 ft)</td>
<td>B03001A11M020</td>
</tr>
<tr>
<td></td>
<td>5m (16.4 ft)</td>
<td>B03001A11M050</td>
</tr>
</tbody>
</table>

## Emergency stop module order guide

**FF-SRSS935**

- Voltage:  
  - 2: 24 Vdc  
  - E: 120 Vac  
  - Q: 230 vac

Refer to the Safety Control Modules section for product complete specifications
FF2 and FF3 Series
Magnetically Actuated Non-Contact Barrel Safety Switches

DESCRIPTION
The FF2 is an 18 mm barrel (thread) mounting magnetically actuated safety switch with one safety contact and an optional indicator contact, if required. The FF3 is a 30 mm barrel (thread) mounting magnetically actuated safety switch with up to two safety contacts and one indicator contact.

The barrel, thread, mount design is easy to install into the frame of a machine guard and allows for flush mounting, reducing potential switch damage and space constraint issues. Both the FF2 and FF3 series are sealed to IP67 requirements enabling use in most harsh environments.

FEATURES
- Options of one or two safety contacts
- Tested to over 1,000,000 operations, full load
- Simple M18 and M30 barrel (thread) mounting
- Guard status indication available
- ac and dc versions
- CE and UL approvals

POTENTIAL APPLICATIONS
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicon equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery
## FF2 and FF3 Series

### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>FF2-10-AC</th>
<th>FF2-10-DC</th>
<th>FF3-20-AC</th>
<th>FF3-20-DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FF2-11-AC</td>
<td>FF3-21-AC</td>
<td>FF3-21-DC</td>
<td></td>
</tr>
<tr>
<td>Contact arrangement</td>
<td>1NC (FF2-10-AC)</td>
<td>1NC (FF2-10-DC)</td>
<td>2NC (FF3-20-AC)</td>
<td>2NC (FF3-20-DC)</td>
</tr>
<tr>
<td></td>
<td>1NC/1NO (FF2-11-AC)</td>
<td>1NC/1NO (FF2-11-DC)</td>
<td>2NC/1NO (FF3-21-AC)</td>
<td>2NC/1NO (FF3-21-DC)</td>
</tr>
<tr>
<td>Safety contact rating</td>
<td>230 Vac/2 A</td>
<td>30 Vdc/1 A inductive/ resistive</td>
<td>230 Vac/2A</td>
<td>30 Vdc/1 A inductive/ resistive</td>
</tr>
<tr>
<td>Safety contact operating distance</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
<td>10 mm [0.4 in] ON; 35 mm [1.38 in] OFF</td>
<td>10 mm [0.4 in] ON; 35 mm [1.38 in] OFF</td>
</tr>
<tr>
<td>Safety contact close/drop/bounce</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
</tr>
<tr>
<td>Auxiliary contact rating</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
</tr>
<tr>
<td>Auxiliary contact operating distance</td>
<td>7 mm [0.28 in] OFF; 14 mm [0.55 in] ON</td>
<td>7 mm [0.28 in] OFF; 14 mm [0.55 in] ON</td>
<td>7 mm [0.28 in] OFF; 20 mm [0.79 in] ON</td>
<td>7 mm [0.28 in] OFF; 20 mm [0.79 in] ON</td>
</tr>
<tr>
<td>Auxiliary contact close/drop/bounce</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
</tr>
<tr>
<td>Internal fuse</td>
<td>ac: 2 A fast acting</td>
<td>dc: 1 A fast acting</td>
<td>ac: 2 A fast acting</td>
<td>dc: 1 A fast acting</td>
</tr>
<tr>
<td>External fuse (customer supplied)</td>
<td>ac: 1.6 A fast acting</td>
<td>dc: 0.8 A fast acting</td>
<td>ac: 1.6 A fast acting</td>
<td>dc: 0.8 A fast acting</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
</tr>
<tr>
<td>Vibration/shock</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
</tr>
<tr>
<td>Mounting and fixture</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
</tr>
<tr>
<td>Construction</td>
<td>Red ABS resin filled</td>
<td>Red ABS resin filled</td>
<td>Red ABS resin filled</td>
<td>Red ABS resin filled</td>
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</tbody>
</table>

### DIMENSIONS

<table>
<thead>
<tr>
<th>FF2 mm[in]</th>
<th>FF3 mm[in]</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Switch" /></td>
<td><img src="image2" alt="Switch" /></td>
</tr>
<tr>
<td><img src="image3" alt="Actuator" /></td>
<td><img src="image4" alt="Actuator" /></td>
</tr>
</tbody>
</table>
Magnetically Actuated Non-Contact Barrel Safety Switches

### CONNECTIONS

<table>
<thead>
<tr>
<th>FF2-10</th>
<th>FF3-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF2-10-AC &amp; FF2-10-DC</td>
<td>FF3-20-AC &amp; FF3-20-DC</td>
</tr>
<tr>
<td>Brown</td>
<td>Blue</td>
</tr>
<tr>
<td>Red</td>
<td>Blue</td>
</tr>
<tr>
<td>Green</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FF2-11</th>
<th>FF3-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF2-11-AC &amp; FF2-11-DC</td>
<td>FF3-21-AC &amp; FF3-21-DC</td>
</tr>
<tr>
<td>Red</td>
<td>Blue</td>
</tr>
<tr>
<td>Green</td>
<td>Yellow</td>
</tr>
<tr>
<td>Red</td>
<td>Black</td>
</tr>
</tbody>
</table>

### CONTACTS

**FF2**

- FF2-11-AC-03
- FF2-11-DC-03
- FF2-10-AC-03
- FF2-10-DC-03

- Red — Blue
- Green — Yellow
- Brown — Blue

**FF3**

- FF3-21-AC-03
- FF3-21-DC-03
- FF3-20-AC-03
- FF3-20-DC-03

- Red — Blue
- Black — White
- Green — Yellow

**NOTE:** Contact configurations show under closed condition for guard device.
## ORDER GUIDE

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF2-10-AC-03</td>
<td>Barrel safety switch, 18 mm [0.70 in], 1NC, ac, 3 m pre-wired</td>
</tr>
<tr>
<td>FF2-11-AC-03</td>
<td>Barrel safety switch, 18 mm [0.70 in], 1NC/1NO, ac, 3 m pre-wired</td>
</tr>
<tr>
<td>FF2-10-DC-03</td>
<td>Barrel safety switch, 18 mm [0.70 in], 1NC, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FF2-11-DC-03</td>
<td>Barrel safety switch, 18 mm [0.70 in], 1NC/1NO, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FF3-20-AC-03</td>
<td>Barrel safety switch, 30 mm [1.18 in], 2NC, ac, 3 m pre-wired</td>
</tr>
<tr>
<td>FF3-21-AC-03</td>
<td>Barrel safety switch, 30 mm [1.18 in], 2NC/1NO, ac, 3 m pre-wired</td>
</tr>
<tr>
<td>FF3-20-DC-03</td>
<td>Barrel safety switch, 30 mm [1.18 in], 2NC, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FF3-21-DC-03</td>
<td>Barrel safety switch, 30 mm [1.18 in], 2NC/1NO, dc, 3 m pre-wired</td>
</tr>
</tbody>
</table>

### WARNING

#### RISK TO LIFE OR PROPERTY

Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.

**Failure to comply with these instructions could result in death or serious injury.**

### WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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- **Internet:** www.honeywell.com/sensing

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  +65 6445-3033 Fax
- **Europe:** +44 (0) 1698 481481
  +44 (0) 1698 481676 Fax
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  +1-305-883-8257 Fax
- **USA/Canada:** +1-800-537-6945
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  +1-815-235-6545 Fax

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June 2009
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Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
FF5 Series
Magnetically Actuated Non-Contact Safety Switches

DESCRIPTION
Honeywell FF5 switches are magnetically operated, non-contact safety switches designed for use in many machine-guarding applications. The FF5 is available in both ABS and 316 grade stainless steel and is capable of switching up to 300 mA at 24 Vdc as per features below. The switch and actuator are fully sealed to IP67 and can often be used in wet or dusty environments. With correct installation, the FF5 safety switches comply with the guidelines given in EN1088.

FEATURES
- Non-contact safety switches
- Switches can be magnetically actuated from almost any angle
- Compact, rugged design
- Tested to over 1,000,000 operations, full-load
- 6 mm [0.24 in] operating distance
- Up to 300 mA at 24 Vdc switching capability
- IP67
- Stainless steel option
- CE, UL approvals

POTENTIAL APPLICATIONS
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assemble equipment
- Semicon equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery
FF5 Series

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>FF5</th>
<th>FF5-SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact arrangement</td>
<td>Max: 2NC safety and 1NO auxiliary</td>
<td>Max: 2NC safety and 1NO auxiliary</td>
</tr>
<tr>
<td>Safety contact rating</td>
<td>24 Vdc/0.3 A inductive/resistive</td>
<td>24 Vdc/0.3 A inductive/resistive</td>
</tr>
<tr>
<td>Safety contact operating distance</td>
<td>6 mm [0.24 in] ON; 17 mm [0.67 in] OFF</td>
<td>6 mm [0.24 in] ON; 17 mm [0.67 in] OFF</td>
</tr>
<tr>
<td>Safety contact close/drop/bounce</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
</tr>
<tr>
<td>Auxiliary contact rating</td>
<td>24 Vdc/0.3 A inductive/resistive</td>
<td>24 Vdc/0.3 A inductive/resistive</td>
</tr>
<tr>
<td>Auxiliary contact operating distance</td>
<td>6 mm [0.24 in] OFF; 17 mm [0.67 in] ON</td>
<td>6 mm [0.24 in] OFF; 17 mm [0.67 in] ON</td>
</tr>
<tr>
<td>Auxiliary contact close/drop/bounce</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
</tr>
<tr>
<td>Internal fuse</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>External fuse (customer supplied)</td>
<td>dc: 0.2 A fast acting</td>
<td>dc: 0.2 A fast acting</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP67</td>
<td>IP67</td>
</tr>
<tr>
<td>Vibration/shock</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10 °C to 55 °C</td>
<td>-10 °C to 55 °C</td>
</tr>
<tr>
<td></td>
<td>[14 °F to 131 °F]</td>
<td>[14 °F to 131 °F]</td>
</tr>
<tr>
<td>Mounting and fixture</td>
<td>Target to target</td>
<td>Target to target</td>
</tr>
<tr>
<td>Construction</td>
<td>Red ABS resin filled</td>
<td>316 grade stainless steel resin filled</td>
</tr>
</tbody>
</table>

FF5 CONTACTS

NOTE: Contact configurations show under closed condition for guard device.

FF5 CONNECTIONS

*The safety contact must be fused externally. dc switch – external fuse= 0.2 A fast acting*
Magnetically Actuated Non-Contact Safety Switches

**FF5 DIMENSIONS mm[in]**

<table>
<thead>
<tr>
<th>Side</th>
<th>Dimension</th>
<th>Side</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF5 ABS</td>
<td>52 (2.04)</td>
<td>53 (2.08)</td>
<td>3 (0.11)</td>
</tr>
<tr>
<td></td>
<td>22 (0.86)</td>
<td>22 (0.86)</td>
<td>3 (0.11)</td>
</tr>
<tr>
<td></td>
<td>28 (1.1)</td>
<td>29 (1.14)</td>
<td>13.5 (0.53)</td>
</tr>
<tr>
<td></td>
<td>14 (0.55)</td>
<td>SIDE</td>
<td>SIDE</td>
</tr>
<tr>
<td></td>
<td>4.2 (0.16)</td>
<td>8.1 (0.31)</td>
<td>6.4 (0.25)</td>
</tr>
</tbody>
</table>

| FF5 SS | |
|--------| |
| 4.2 (0.16) | 8.1 (0.31) | 6.4 (0.25) |
ORDER GUIDE

<table>
<thead>
<tr>
<th>Catalog Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF5-21-DC-03</td>
<td>Safety switch and actuator, red ABS, 2NC/1NO, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FF5-21-DC-03-SS</td>
<td>Safety switch and actuator, stainless steel, 2NC/1NO, dc, 3 m pre-wired</td>
</tr>
<tr>
<td>FF5-21-DC-10</td>
<td>Safety switch and actuator, red ABS, 2NC/1NO, dc, 10 m pre-wired</td>
</tr>
<tr>
<td>FF5-21-DC-10-SS</td>
<td>Safety switch and actuator, stainless steel, 2NC/1NO, dc, 10 m pre-wired</td>
</tr>
</tbody>
</table>

**WARNING**

**RISK TO LIFE OR PROPERTY**

Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.

**Failure to comply with these instructions could result in death or serious injury.**

**WARNING**

**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

**WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

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**Phone and Fax:**

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  +65 6445-3033 Fax
- **Europe** +44 (0) 1698 481481
  +44 (0) 1698 481676 Fax
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  +1-305-883-8257 Fax
- **USA/Canada** +1-800-537-6945
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June 2009
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FF6 Series
Magnetically Actuated Non-Contact Safety Switches

DESCRIPTION
Honeywell FF6 switches are magnetically operated, non-contact safety switches designed for use in many machine-guarding applications. The FF6 is available in both ABS and 316 grade stainless steel. The switch and actuator are fully sealed to IP67 and can often be used in wet or dusty environments. With correct installation, the FF6 safety switches comply with the guidelines given in EN1088.

FEATURES
- Non-contact safety switches
- Up to three contacts
- 10 mm [0.4 in] operating distance
- Up to 2 A switching
- IP67
- Stainless steel option
- CE and UL approvals

POTENTIAL APPLICATIONS
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicom equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery
# FF6 Series

## TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>FF6 ac</th>
<th>FF6 dc</th>
<th>FF6-SS ac</th>
<th>FF6-SS dc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact arrangement</td>
<td>Max: 2NC safety and 1NO auxiliary</td>
<td>Max: 2NC safety and 1NO auxiliary</td>
<td>1NC safety</td>
<td>Max: 2NC safety and 1NO auxiliary</td>
</tr>
<tr>
<td>Safety contact rating</td>
<td>230 Vac/2 A</td>
<td>30 Vdc/1 A inductive/resistive</td>
<td>230 Vac/2A</td>
<td>30 Vdc/1 A inductive/resistive</td>
</tr>
<tr>
<td>Safety contact operating distance</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
<td>10 mm [0.4 in] ON; 30 mm [1.18 in] OFF</td>
</tr>
<tr>
<td>Safety contact close/drop/bounce</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
<td>3 ms/2.1 ms/0.7 ms</td>
</tr>
<tr>
<td>Auxiliary contact rating</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
<td>15 W/10 VA</td>
</tr>
<tr>
<td>Auxiliary contact operating distance</td>
<td>7 mm [0.28 in] OFF; 20 mm [0.79 in] ON</td>
<td>7 mm [0.28 in] OFF; 20 mm [0.79 in] ON</td>
<td>7 mm [0.28 in] OFF; 20 mm [0.79 in] ON</td>
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</tr>
<tr>
<td>Auxiliary contact close/drop/bounce</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
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<td>0.5 ms/0.3 ms/0.7 ms</td>
<td>0.5 ms/0.3 ms/0.7 ms</td>
</tr>
<tr>
<td>Internal fuse</td>
<td>ac: 2 A fast acting</td>
<td>dc: 1 A fast acting</td>
<td>ac: 2 A fast acting</td>
<td>dc: 1 A fast acting</td>
</tr>
<tr>
<td>External fuse (customer supplied)</td>
<td>ac: 1.6 A fast acting</td>
<td>dc: 0.8 A fast acting</td>
<td>ac: 1.6 A fast acting</td>
<td>dc: 0.8 A fast acting</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
</tr>
<tr>
<td>Vibration/shock</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
<td>50 Hz to 100 Hz/10 g</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
<td>-10 °C to 55 °C [14 °F to 131 °F]</td>
</tr>
<tr>
<td>Mounting and fixture</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
<td>Target to target</td>
</tr>
<tr>
<td>Construction</td>
<td>Red ABS resin filled</td>
<td>Red ABS resin filled</td>
<td>316 grade stainless steel resin filled</td>
<td>316 grade stainless steel resin filled</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>316 grade stainless steel resin filled</td>
<td>316 grade stainless steel resin filled</td>
</tr>
</tbody>
</table>
Magnetically Actuated Non-Contact Safety Switches

**CONTACTS AND CONNECTIONS: PRE-WIRED SWITCHES**

<table>
<thead>
<tr>
<th>FF6-21-ABS (ac &amp; dc)</th>
<th>FF6-20 ABS (ac &amp; dc)</th>
<th>FF6-11 ABS (ac &amp; dc)</th>
<th>FF6-10 ABS (ac &amp; dc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF6-21-SS (dc only)</td>
<td>FF6-20 SS (dc only)</td>
<td>FF6-11 (dc only)</td>
<td>FF6-10 SS (ac &amp; dc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>Brown</td>
<td>Red</td>
<td>Brown</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>Yellow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FF6-10-03-SS**

| Brown               | Blue                  |
|                     |                       |
| Green/Yellow        |                       |

**NOTE:** Contact configurations show under closed condition for guard device.

**CONTACTS AND CONNECTIONS: QUICK DISCONNECT CONNECTIONS**

<table>
<thead>
<tr>
<th>FF6-21-AC-QD05</th>
<th>FF6-20-AC-QD05</th>
<th>FF6-11-AC-QD05</th>
<th>FF6-10-AC-QD05</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF6-21-DC-QD05</td>
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**FF6-10-AC-QD05-SS**

| Brown               | Safety N/C            |
| Blue                |                        |
| Green/Yellow        | Earth                 |

| Brown               | Safety N/C            |
| Blue                |                        |
## FF6 Series

### DIMENSIONS

**FF6 STAINLESS STEEL PRE-WIRED mm [in]**

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**FF6 QUICK CONNECT mm [in]**

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**FF6 PRE-WIRED mm [in]**

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## ORDER GUIDE

<table>
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<tr>
<th>Catalog Listing</th>
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<tbody>
<tr>
<td>FF6-10-DC-03-SS</td>
<td>Safety switch and actuator, stainless steel, 1NC safety, dc, 3 m pre-wired</td>
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<td>FF6-11-DC-03-SS</td>
<td>Safety switch and actuator, stainless steel, 1NC safety and 1 NO auxiliary, dc, 3 m pre-wired</td>
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<td>Safety switch and actuator, stainless steel, 2NC safety, dc, 3 m pre-wired</td>
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<tr>
<td>FF6-10-AC-03-SS</td>
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<tr>
<td>FF6-10-AC-QD-SS</td>
<td>Safety switch and actuator, stainless steel, 1NC safety, ac, M12 quick disconnect, no cable</td>
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<td>FF6-10-AC-QD05-SS</td>
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WARNING
RISK TO LIFE OR PROPERTY
Never use this product for an application involving serious risk to life or property without ensuring that the system as a whole has been designed to address the risks, and that this product is properly rated and installed for the intended use within the overall system.
Failure to comply with these instructions could result in death or serious injury.

WARNING
MISUSE OF DOCUMENTATION
- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.
Failure to comply with these instructions could result in death or serious injury.

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Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.
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Internet: www.honeywell.com/sensing

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Europe +44 (0) 1698 481481
+44 (0) 1698 481676 Fax
Latin America +1-305-805-8188
+1-305-883-8257 Fax
USA/Canada +1-800-537-6945
+1-815-235-6847
+1-815-235-6545 Fax

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