

# GKM Series (Global Miniature Safety Key Interlock Switch)

## FEATURES

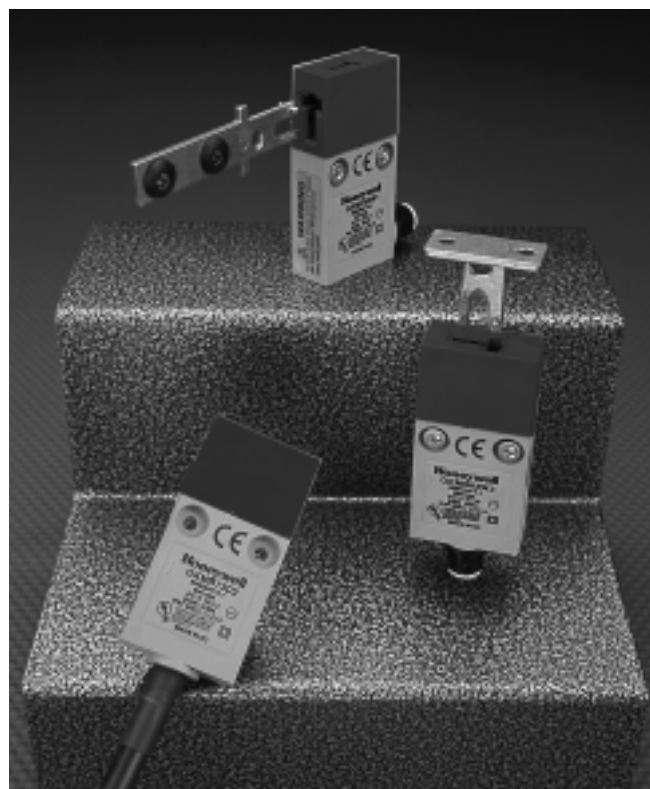
- Red body colour
- Integrated cable or connector(s)
- Bottom or side entry cable
- 90° and straight key
- Top or side key entry
- High switching current capabilities
- Extremely compact enclosure
- Positive opening operation of Normally Closed contacts conforming to IEC/EN 60947-5-1-3
- IP 67 Enclosure 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



(Pending)



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 50Vac or Vdc
Operating Current $I_e$	1 microamp to 100mA

Example of catalog listing using a low energy basic switch - GKMA19W1

## WARNING

### MISUSE OF DOCUMENTATION

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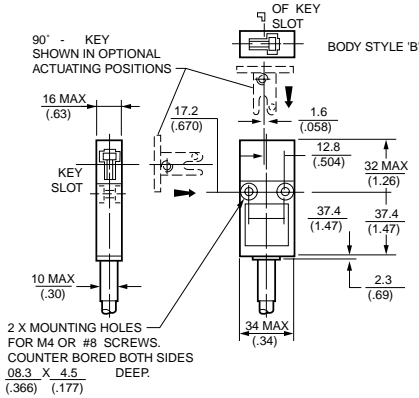
Failure to comply with these instructions could result in death or serious injury.

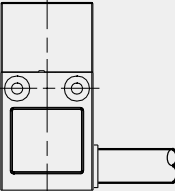
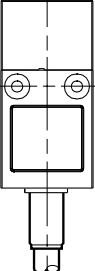
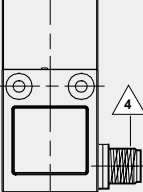
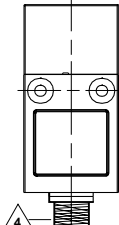
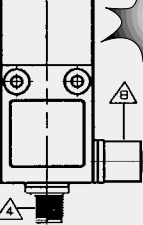
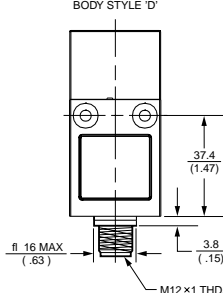


GKM Series  
Miniature Safety Key  
Interlock Switches

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,  
EN 60204,  
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.)

\* See Standards (page 161)



Body Style	Cable/Connector	
	CABLE LENGTHS IN 1 METRE INCREMENTS	1
	CABLE SPEC: SJTO RATED P.V.C. TYPE	2
	3 METRES IS NORMAL MAXIMUM CABLE LENGTH.	3
	ZERO INDICATES NO CABLE BUT CONNECTOR	0
		
	 Micro-change DC Style M12, 4 Pin with external threads/male  'F' version also has 4 Pin with internal threads/female	
		X

▲ Low Energy Contacts  
Note: See page 167

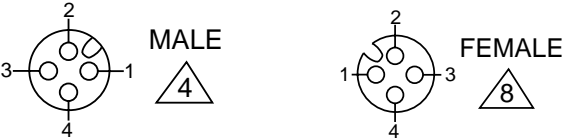
Ordering:



Example: GKMD03W2

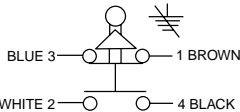
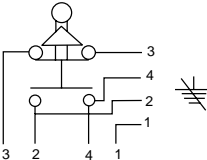
Switch Type

CONNECTOR PIN-OUTS



Key Style

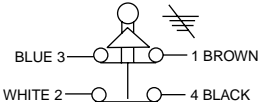
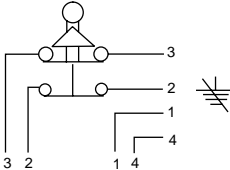
SLOW-ACTION CONTACTS  
BREAK BEFORE MAKE  
1 NORMALLY CLOSED/1 NORMALLY OPEN



SLOW-ACTION CONTACTS  
BREAK BEFORE MAKE  
1 NORMALLY CLOSED/1 NORMALLY OPEN  
LOW ENERGY CONTACTS

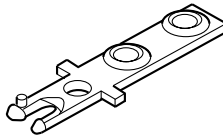


SLOW-ACTION CONTACTS  
2 NORMALLY CLOSED

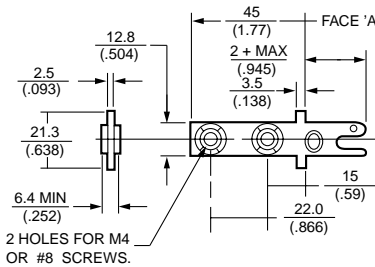


SLOW-ACTION CONTACTS  
2 NORMALLY CLOSED  
LOW ENERGY CONTACTS

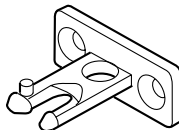
Details of straight key (stainless steel)



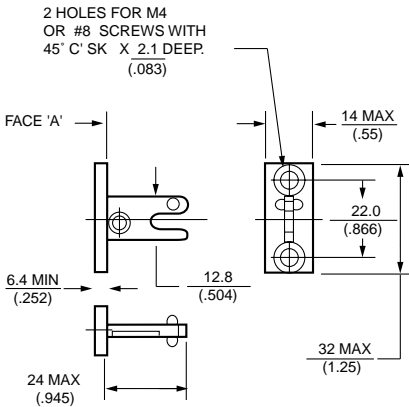
Replacement part number GKZ51M



Details of 90° key (stainless steel)



Replacement part number GKZ52M



3

9<sup>+</sup>

6

7<sup>+</sup>

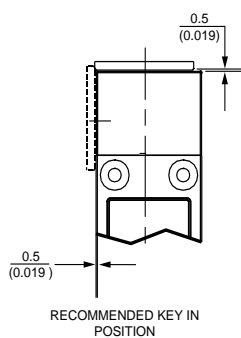
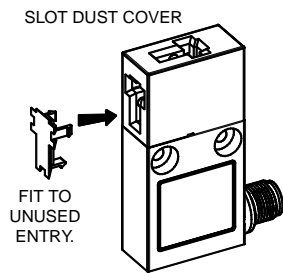
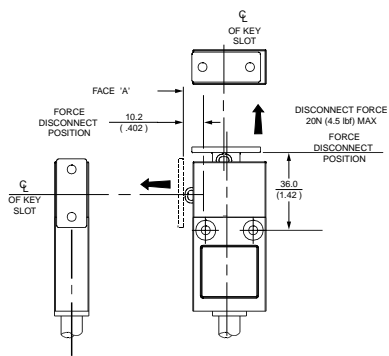
X

W1

W2

WX

Optional Key Positions



## 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)



GK

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.

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## GKB- Metal Standard

GKC - (w/1 LED)

12...250 Vac/dc

GKD - (w/2 LED)

18...30 Vdc - EN 50041

### 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

**Operating forces:** Insertion force: 35 N / 8 lb

Extraction force: 28 N / 6 lb

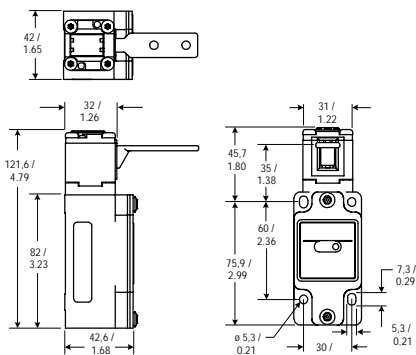
**Vibration** 10 g conforming to IEC 68-2-6

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

**Terminal marking** to EN 50013

\* See Standards (page 179)

Dimensions in mm / in



**Conduit Thread**

Standard = **B**

**A** = 1/2" NPT

with 1 LED = **C**

**C** = 20 mm

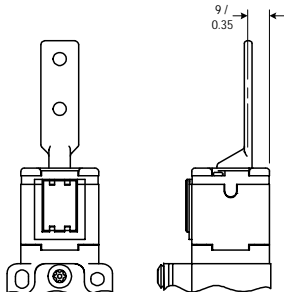
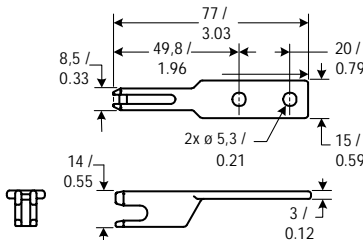
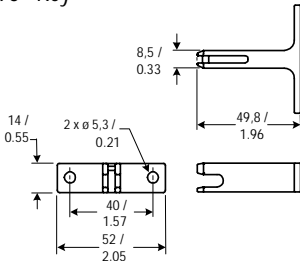
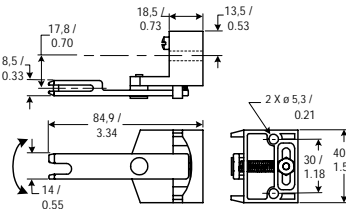
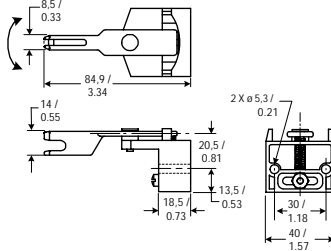
Switch Ordering:

**GK** **X** **X** **X** OR **XX**

Example: GKBC36LX + GKZ56

• Industrial Safety Products •

GK Series

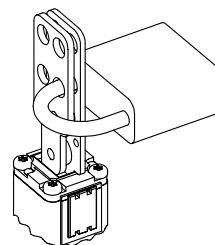
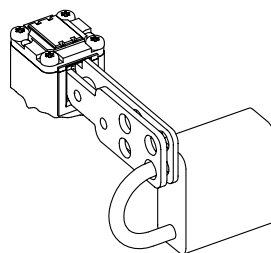
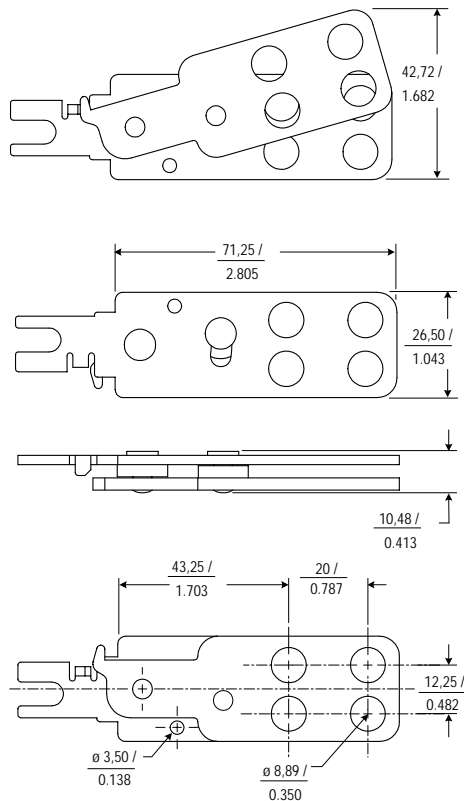
Head Orientation		Key Type (sold separately)		
	<b>L</b>	<b>Straight Key</b>  Door swing radius down to 250 mm / 9.84 in	<b>6</b>	
		<b>90° Key</b>  Door swing radius down to 250 mm / 9.84 in	<b>7</b>	
		<b>Spring-loaded Key: Up/Down</b>  Door swing radius down to 150 mm / 5.9 in	<b>8</b>	
		<b>Spring-loaded Key: Left/Right</b>  Door swing radius down to 150 mm / 5.9 in	<b>9</b>	
		Key Ordering:		
<b>X X</b>		<b>+ GKZ5</b>	<b>X</b>	

GK

## 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 unauthorized 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

Designation and Utilization Category		Rated Operational Current I <sub>e</sub> (A) at Rated Operational Voltage U <sub>e</sub> (V)						
		24 V	120 V	240 V	380 V	480 V	500 V	600 V
AC15	A500	—	6 A	3 A	1,9 A	1,5 A	1,4 A	—
AC15	A600	—	6 A	3 A	1,9 A	1,5 A	1,4 A	1,2 A
DC13	Q300	2,8 A	0,55 A	0,27 A	—	—	—	—

Rated thermal current (I <sub>th</sub> )	10 A	Sealing	IP66; NEMA 1, 12, 13
Rated impulse withstand (U <sub>imp</sub> )	2500 V	Pollution degree	3
Rated insulation voltage (U <sub>i</sub> )	500 V, 600 V	Operating temperature range	-25 °C to 85 °C [-13 °F to 185 °F]
Short-circuit protective device (type/max. rating)	Class J fuse (10 A/600 V)	Mechanical life	1,000,000 operations
Conditional short-circuit current	1000 A	—	—

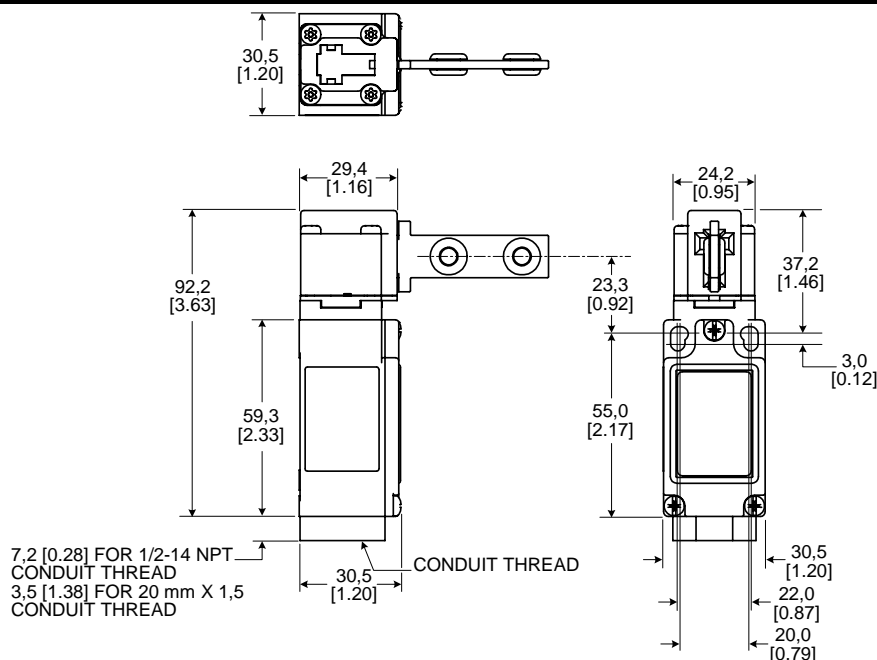
Complies with:

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 (For reference only mm [in])



Head Code L	Head Code M	Head Code N	Head Code P

# Safety Door Interlock Switches

## KEY MOUNTING DIMENSIONS

GKZ51M	GKZ52M

1. Recommended key position.

## CIRCUIT AND TRAVEL DIAGRAMS

Switch Code 01: 1NC/1NO	Switch Code 03: 1NC/1NO (BBM)	Switch Code 06: 2NC

1. Recommended key position.

## SWITCH ORDER GUIDE (Not all combinations are active listings.)

<b>Series</b>	<b>GKE</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>Head Orientation*</b>
Dual Entry Key Operated Safety Limit Switch					L = Front
	<b>Conduit</b>		<b>Contacts</b>		
	A = 1/2 in NPT		01 = 1NC/1NO		
	C = M20 x 1,5		03 = 1NC/1NO (BBM)		
			06 = 2NC		

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

## SWITCH ORDER GUIDE (active listings)

Catalog Listing	Description
GKEA01L	Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 1NC/1NO contacts, front head orientation
GKEA03L	Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 1NC/1NO (BBM) contacts, front head orientation
GKEA06L	Dual Entry Key Operated Safety Limit Switch, 1/2 in NPT conduit, 2NC contacts, front head orientation
GKEC01L	Dual Entry Key Operated Safety Limit Switch, M20 x 1,5 conduit, 1NC/1NO contacts, front head orientation
GKEC03L	Dual Entry Key Operated Safety Limit Switch, M20 x 1,5 conduit, 1NC/1NO (BBM) contacts, front head orientation
GKEC06L	Dual Entry Key Operated Safety Limit Switch, M20 x 1,5 conduit, 2NC contacts, front head orientation

## KEY ORDER GUIDE

Catalog Listing	Description
GKZ51M	Straight Key
GKZ52M	90 Degree Key

### ⚠ 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.

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#### 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

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+1-815-235-6545 Fax

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Sensing and Control

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www.honeywell.com/sensing

004738-1-EN IL50 GLO Printed in USA  
October 2006

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# Honeywell

## 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



(Pending)



GKR/GKL

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.

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## 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  
**Approvals\*** IEC 60947-5-1 EN 60947-5-1  
ac15 A300/A600  
dc13 Q300

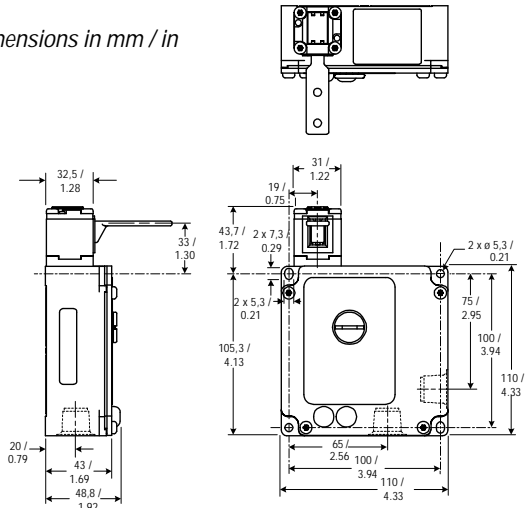
**Operating forces:** Insertion force: 35 N / 8 lb  
Extraction force: 28 N / 6 lb  
Max. solenoid locking force:  
1000 N / 224 lb

**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



Head Left  
or Right

Conduit  
Thread

Head on Left = **L**      **E** = 1/2" NPT

Head on Right = **R**      **G** = 20 mm

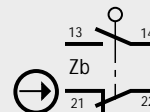
Switch Ordering:

**GK**      **X**      **X**      **X** OR **XX**

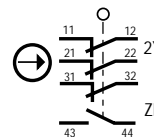
Example: GKLE36PXA2 + GKZ56

### Switch Type

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

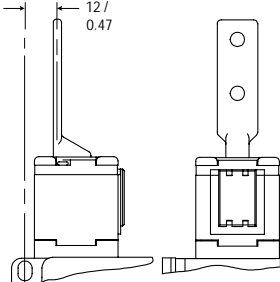
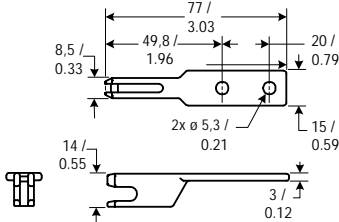
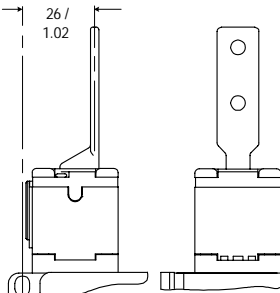
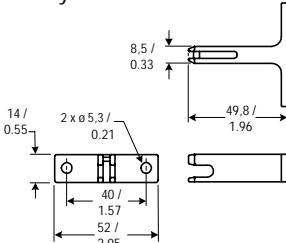
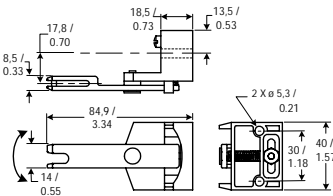
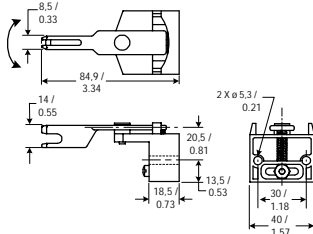


Slow Acting  
3 Normally Closed/1 Normally Open  
Gate and Solenoid Monitor



3

36

Head Orientation	Latching Mechanism	Solenoid and LED Indicator Voltage	Key Type (sold separately)
<div></div> <div>Only for right oriented head</div> <div>M</div>	Mechanical Latch  (Energise solenoid to release key)	24 Vdc	<div><p>Straight Key</p></div> <div>Door swing radius down to 250 mm / 9.84 in</div> <div>6</div>
<div></div> <div>Only for left oriented head</div> <div>P</div>			<div><p>90° Key</p></div> <div>Door swing radius down to 250 mm / 9.84 in</div> <div>7</div>
	Solenoid Latch  (De-energise solenoid to release key)	120 Vac	<div><p>Spring-loaded Key: Up/Down</p></div> <div>Door swing radius down to 150 mm / 5.9 in</div> <div>8</div>
			<div><p>Spring-loaded Key: Left/Right</p></div> <div>Door swing radius down to 150 mm / 5.9 in</div> <div>9</div>
	</		

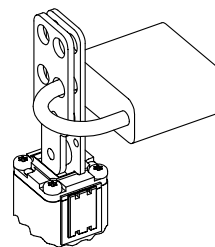
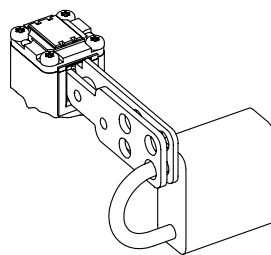
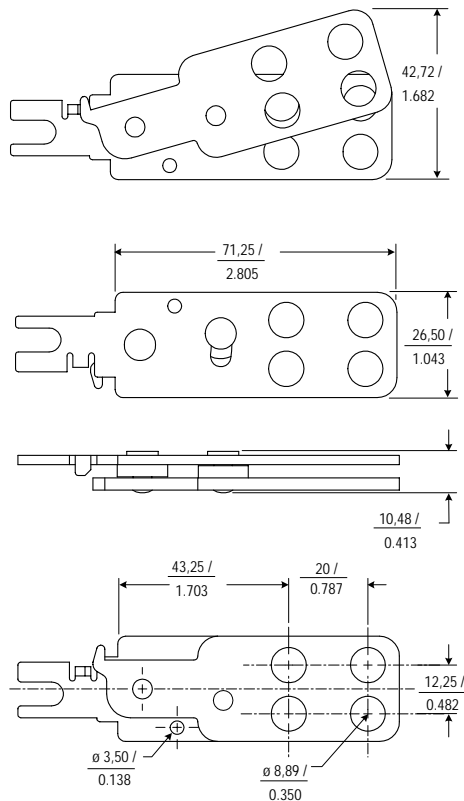
GKR/GKL

## 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 unauthorized removal of the device.

GKR/L

Mounting dimensional diagram (mm/in):



Ordering:

**GKZL2**

## 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

Designation and Utilization Category		Rated Operational Current I <sub>e</sub> (A) at Rated Operational Voltage U <sub>e</sub> (V)			
		120 Vac	125 Vdc	240 Vac/250 Vdc	600 Vac
AC15	A600	6 A	—	3 A	1,2 A
DC13	Q300	—	0,55 A	0,27A	—

Rated thermal current (I <sub>th</sub> )	10 A
Sealing	IP67; NEMA 1, 4, 12, 13
Rated impulse withstand (U <sub>imp</sub> )	2500 V
Pollution degree	2 (micro-environment, inside enclosure); 3 (macro-environment, installation environment)
Rated insulation voltage (U <sub>i</sub> )	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

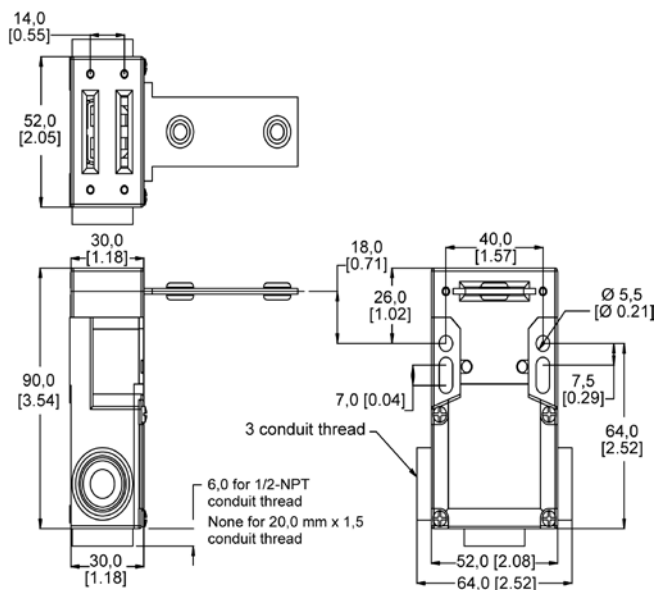
Complies with:

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.

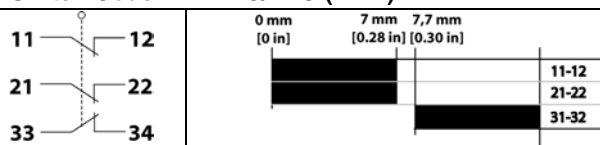
IEC/EN60947-5-1.

## MOUNTING DIMENSIONS

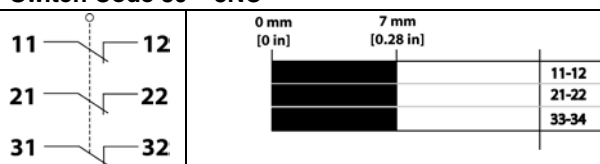


## CIRCUIT AND TRAVEL DIAGRAMS

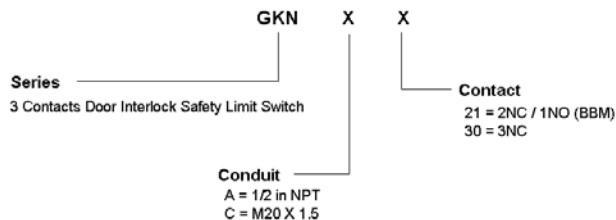
### Switch Code 21 – 2NC/1NO (BBM)



### Switch Code 30 – 3NC



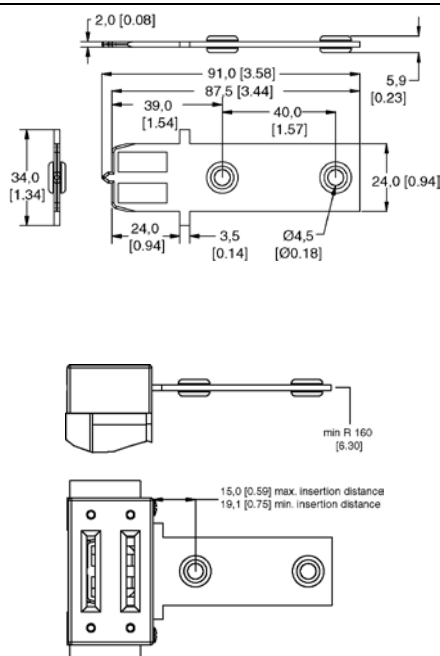
## ORDER GUIDE



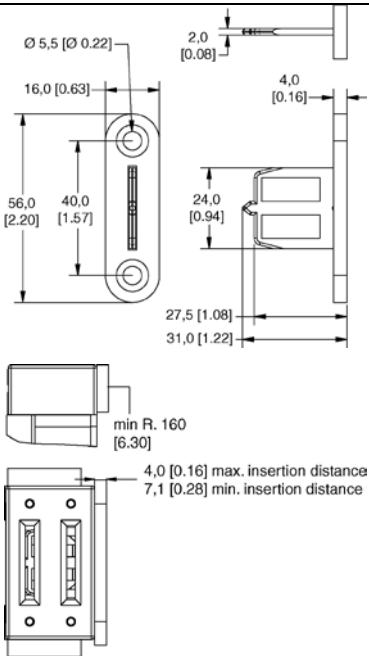
# Safety Interlock Switch

## KEY DIMENSIONS

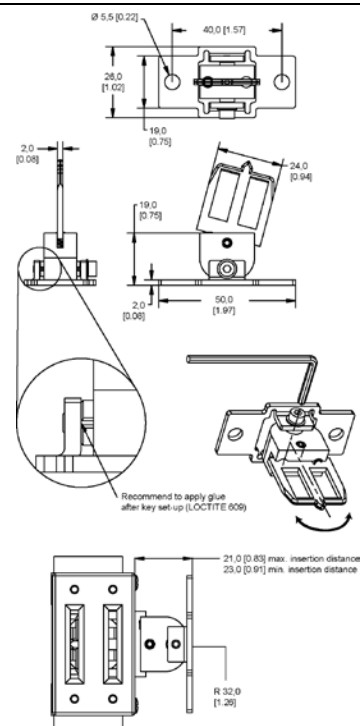
### GKZ41 (M4 Screw)



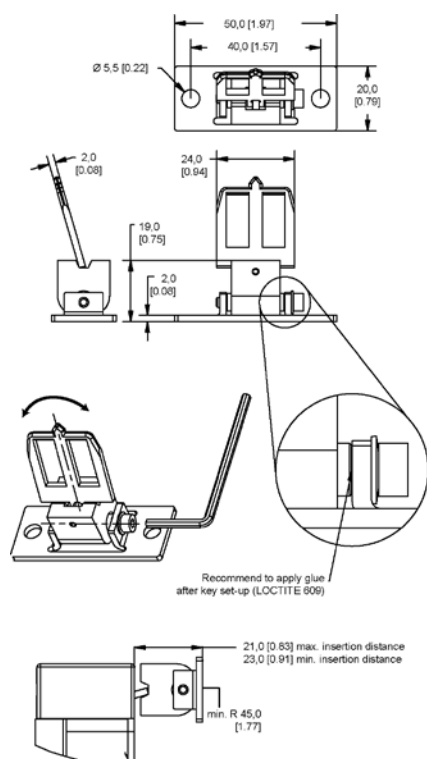
### GKZ42 (M5 Screw)



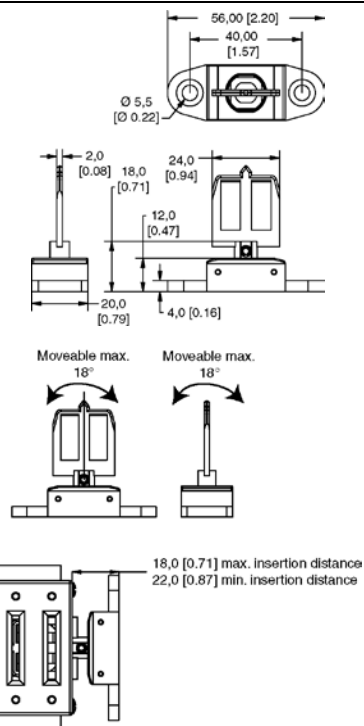
### GKZ43 (M5 Screw)



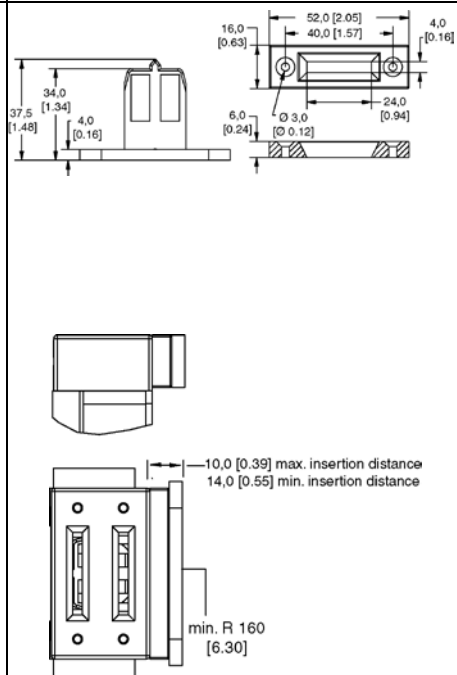
### GKZ44 (M5 Screw)



### GKZ45 (M5 Screw)



### GKZF1 (M5 Screw)



## ORDER GUIDE (ACTIVE LISTINGS)

Catalog Listing	Description
GKNA21	3 contact door interlock safety limit switch; 1/2 in NPT conduit; 2NC/1NO (BBM)
GKNA30	3 contact door interlock safety limit switch; 1/2 in NPT conduit; 3NC
GKNC21	3 contact door interlock safety limit switch; M20 x 1.5 conduit; 2NC/1NO (BBM)
GKNC30	3 contact door interlock safety limit switch; M20 x 1.5 conduit; 3NC

### 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.

## ORDER GUIDE (ACTIVE LISTINGS)

Catalog Listing	Description
GKZ41	Straight key
GKZ42	90° key
GKZ43	Left-right adjustable key
GKZ44	Up-down adjustable key
GKZ45	Multidirectional key
GKZF1	Funnel key

### 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.**

#### 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](mailto:info.sc@honeywell.com)

**Internet:** [www.honeywell.com/sensing](http://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

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004740-2-EN IL50 GLO Printed in USA  
June 2010  
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# Honeywell

## 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<sup>1</sup>
- 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)

<sup>1</sup> 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

Designation and Utilization Category		Rated Operational Current Ie (A) at Rated Operational Voltage Ue (V)		
		120 Vac	125 Vdc	240 Vac/250 Vdc
AC15	B300	3 A	–	1.5 A
DC13	Q300	–	0,55 A	0,27 A

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      230 Vac: +10 %, -15 %, 9 W 110 Vac: +10 %, -15 %, 8 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

GKS	X	XX	X	X	X	X
<b>Series</b>	<b>Conduit</b>	<b>Contacts</b>	<b>Head Orientation</b>	<b>Locking Principal</b>	<b>Solenoid Voltage</b>	<b>Additional Function</b>
Door	A - 1/2 NPT	21 - 2NC/1NO/1NO	L - Front	A - Power to unlock	2 - 24 Vac/dc	L - LED
Interlock	C - M20	22 - 2NC/1NO/1NC	N - Back	S - Power to lock	5 - 110 Vac	
Safety Limit		46 - 3NC/1NO	P - Left		6 - 230 Vac	
Switch,		47 - 4NC	M - Right			
Solenoid						

**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.

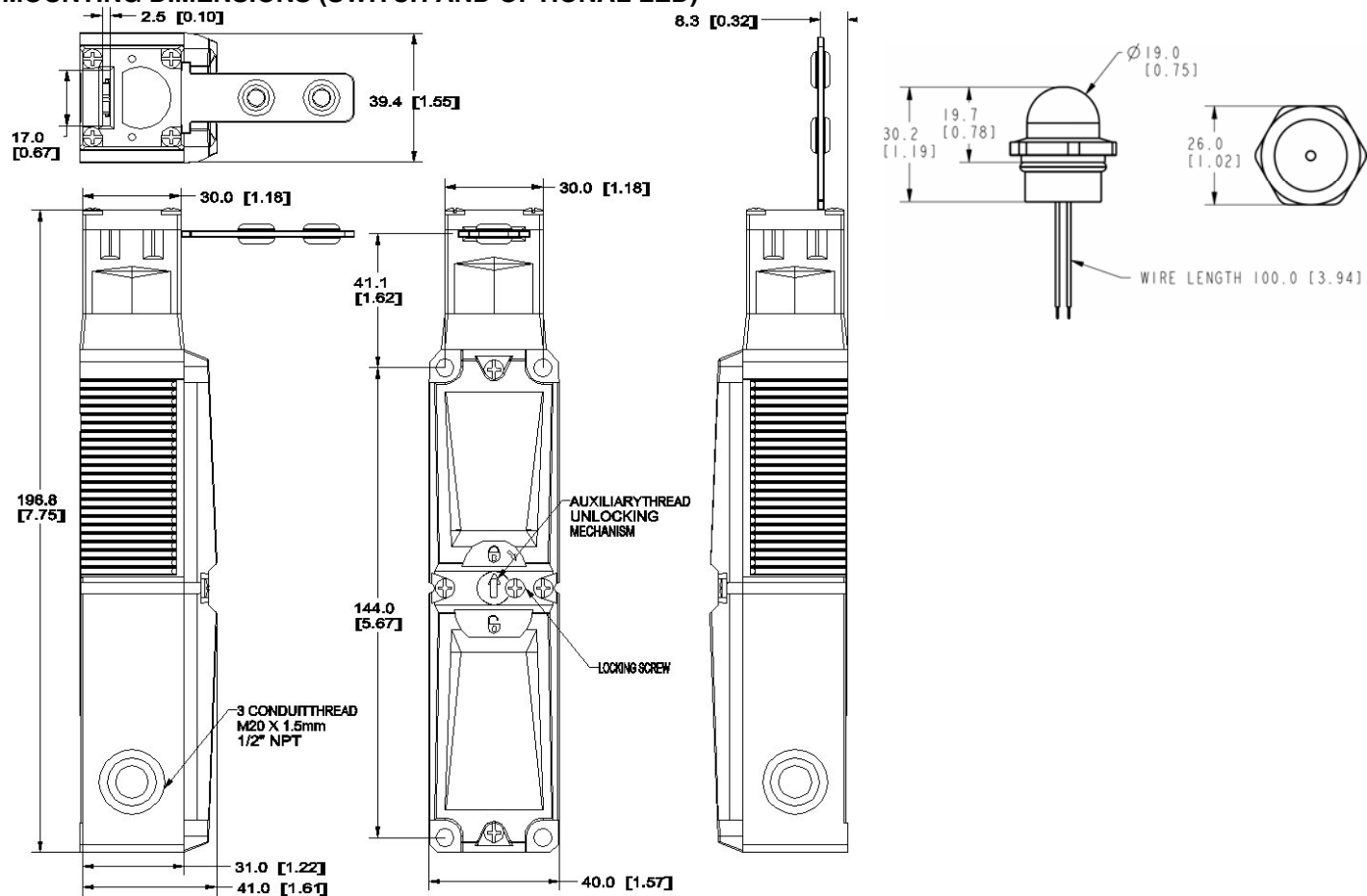
## LED OPTION

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.

Parameter	Value
LED color	Red
Connection	2 connection cables
Screw-in thread	M20 x 1.5/ 0.5 in NPT
Operating voltage/current consumption	24 Vdc/45 Ma 115 Vac/15 mA 230 Vac/15 mA
Degree of protection	IP67

# Multi-Entry Trapped Key-Operated Safety Interlock Switch

## MOUNTING DIMENSIONS (SWITCH AND OPTIONAL LED)



# GKS Series

## SWITCH ORDER GUIDE (ACTIVE LISTINGS)

Catalog Listing	Description
GKSA46LA2	0.5 in conduit, 3NC/1NO, head to front, power to unlock, 24 Vdc solenoid
GKSA46LA5	0.5 in conduit, 3NC/1NO, head to front, power to unlock, 110 Vac solenoid
GKSC46LA2	20 mm conduit, 3NC/1NO, head to front, power to unlock, 24 Vdc solenoid
GKSC46LA6	20 mm conduit, 3NC/1NO, head to front, power to unlock, 230 Vac solenoid

## KEY ORDER GUIDE (ACTIVE LISTINGS)

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

## CIRCUIT AND TRAVEL DIAGRAMS

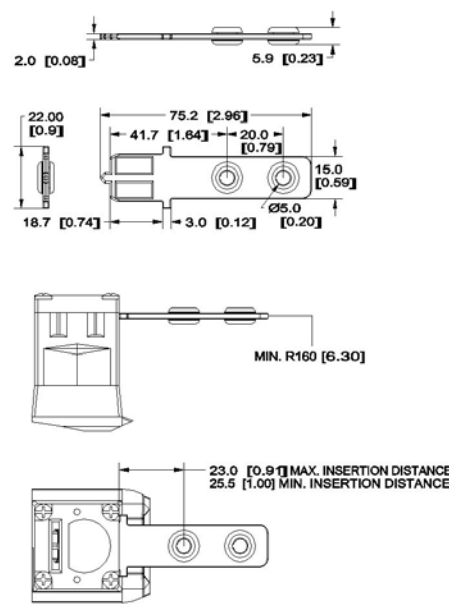
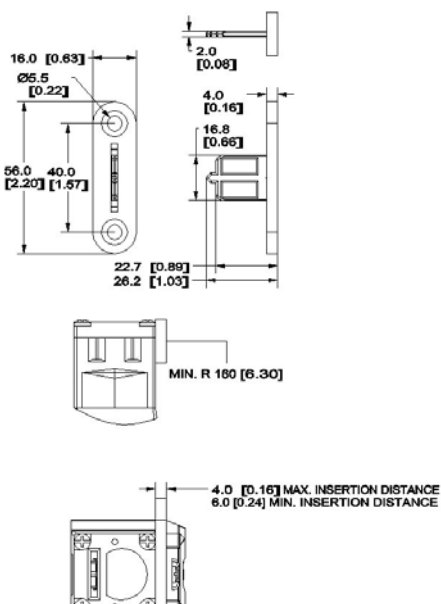
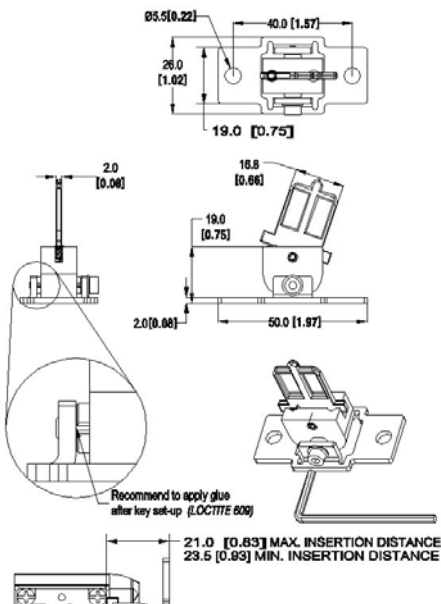
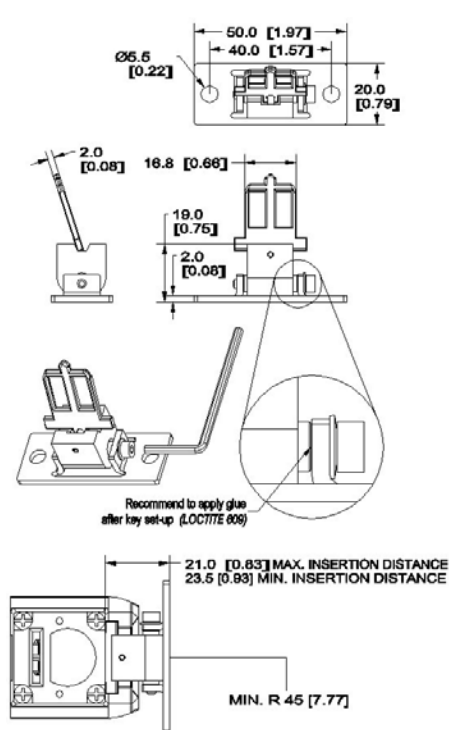
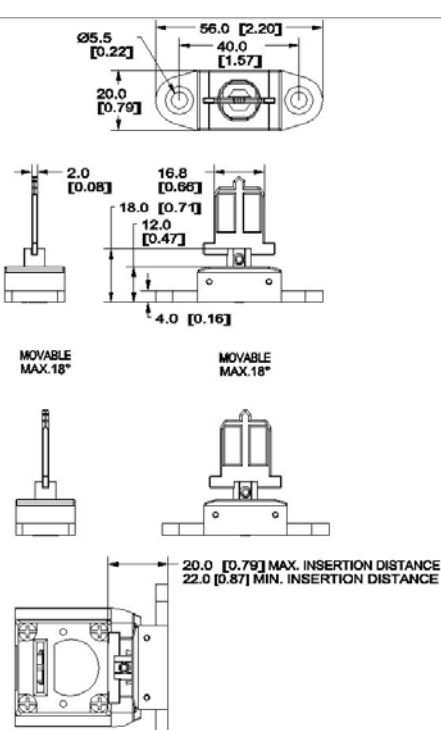
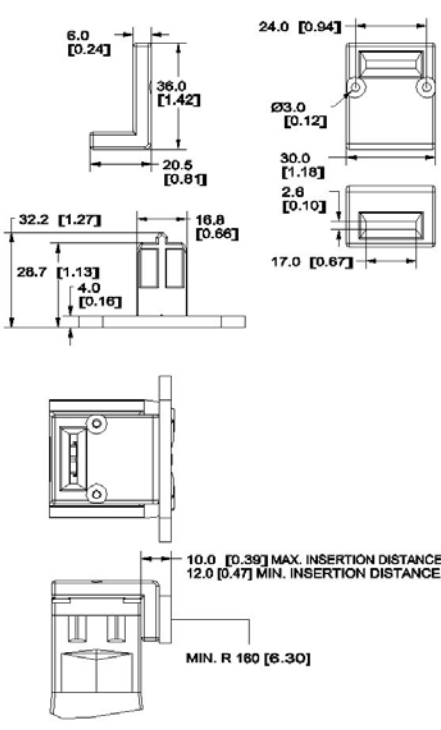
Circuit Drawing	Inserted & Locked	Inserted & Unlocked	Removed & Unlocked
GKS..21..			
GKS..22..			
GKS..46..			
GKS..47..			

**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

GKZS6	GKZS7	GKZS8
 <p>2.0 [0.08]</p> <p>5.9 [0.23]</p> <p>22.00 [0.9]</p> <p>75.2 [2.96]</p> <p>41.7 [1.64]</p> <p>20.0 [0.79]</p> <p>15.0 [0.59]</p> <p>18.7 [0.74]</p> <p>3.0 [0.12]</p> <p>Ø5.0 [0.20]</p> <p>MIN. R160 [6.30]</p> <p>23.0 [0.91] MAX. INSERTION DISTANCE 25.5 [1.00] MIN. INSERTION DISTANCE</p>	 <p>16.0 [0.63]</p> <p>Ø6.5 [0.22]</p> <p>2.0 [0.08]</p> <p>4.0 [0.16]</p> <p>16.8 [0.66]</p> <p>56.0 [2.20]</p> <p>40.0 [1.57]</p> <p>22.7 [0.89]</p> <p>26.2 [1.03]</p> <p>MIN. R 160 [6.30]</p> <p>4.0 [0.16] MAX. INSERTION DISTANCE 6.0 [0.24] MIN. INSERTION DISTANCE</p>	 <p>Ø5.5 [0.22]</p> <p>40.0 [1.57]</p> <p>26.0 [1.02]</p> <p>19.0 [0.75]</p> <p>2.0 [0.08]</p> <p>18.8 [0.66]</p> <p>19.0 [0.75]</p> <p>2.0 [0.08]</p> <p>50.0 [1.97]</p> <p>Recommend to apply glue after key set-up (LOCTITE 609)</p> <p>21.0 [0.83] MAX. INSERTION DISTANCE 29.5 [0.93] MIN. INSERTION DISTANCE</p> <p>MIN. R 32 [1.26]</p>
GKZS4	GKZS9	GKZSF
 <p>Ø6.5 [0.22]</p> <p>50.0 [1.97]</p> <p>40.0 [1.57]</p> <p>20.0 [0.79]</p> <p>2.0 [0.08]</p> <p>16.8 [0.66]</p> <p>19.0 [0.75]</p> <p>2.0 [0.08]</p> <p>Recommend to apply glue after key set-up (LOCTITE 609)</p> <p>21.0 [0.83] MAX. INSERTION DISTANCE 23.5 [0.93] MIN. INSERTION DISTANCE</p> <p>MIN. R 45 [7.77]</p>	 <p>Ø5.5 [0.22]</p> <p>56.0 [2.20]</p> <p>40.0 [1.57]</p> <p>20.0 [0.79]</p> <p>2.0 [0.08]</p> <p>16.8 [0.66]</p> <p>18.0 [0.71]</p> <p>12.0 [0.47]</p> <p>4.0 [0.16]</p> <p>MOVABLE MAX.18"</p> <p>MOVABLE MAX.18"</p> <p>20.0 [0.79] MAX. INSERTION DISTANCE 22.0 [0.87] MIN. INSERTION DISTANCE</p>	 <p>6.0 [0.24]</p> <p>36.0 [1.42]</p> <p>24.0 [0.94]</p> <p>Ø3.0 [0.12]</p> <p>30.0 [1.18]</p> <p>2.8 [0.10]</p> <p>17.0 [0.67]</p> <p>32.2 [1.27]</p> <p>28.7 [1.13]</p> <p>4.0 [0.16]</p> <p>16.8 [0.66]</p> <p>10.0 [0.39] MAX. INSERTION DISTANCE 12.0 [0.47] MIN. INSERTION DISTANCE</p> <p>MIN. R 160 [6.30]</p>

## **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**

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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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### **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](mailto:info.sc@honeywell.com)

**Internet:** [www.honeywell.com/sensing](http://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

Sensing and Control  
Honeywell  
1985 Douglas Drive North  
Golden Valley, MN 55422  
[www.honeywell.com/sensing](http://www.honeywell.com/sensing)

004743-2-EN IL50 GLO Printed in USA  
February 2008  
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# **Honeywell**

# GSS Series

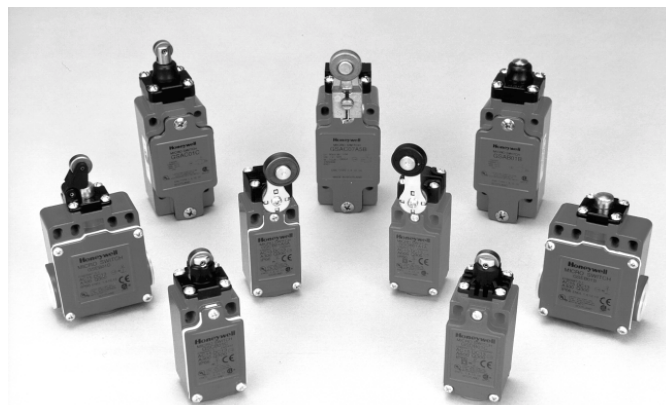
## Global Safety Switch

### 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 $\mu$ A 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

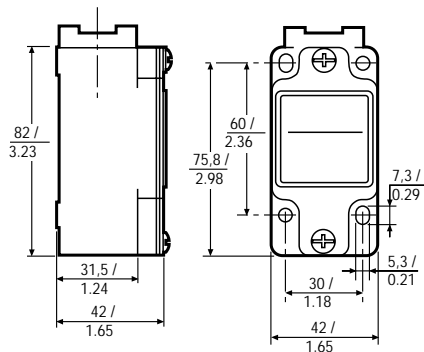
**Vibration** 10 g conforming to IEC 68-2-6

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

**Terminal marking** to EN 50013

\*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

▲ Low Energy Contacts

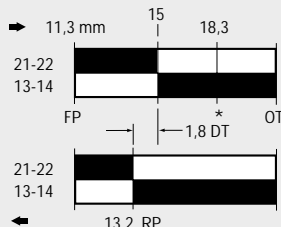
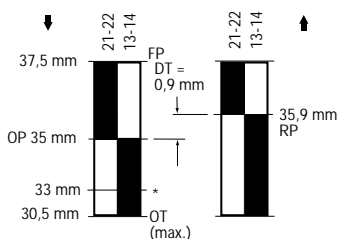
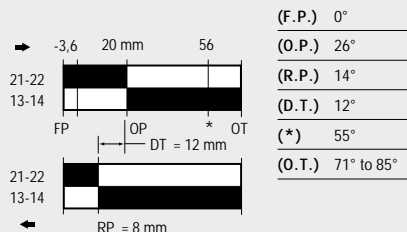
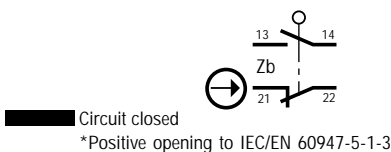
Note: See page 197

**01**

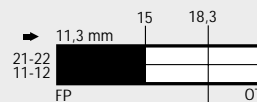
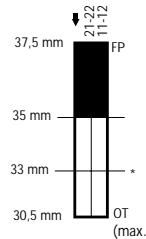
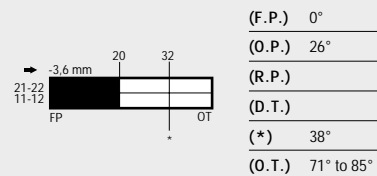
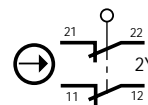
**36<sup>▲</sup>**

**XX**

#### Snap-Action Contacts 1 NORMALLY CLOSED/ 1 NORMALLY OPEN



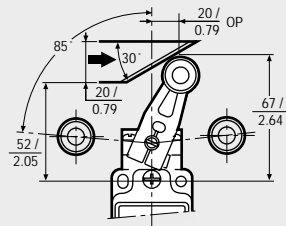
#### Slow-Action Contacts 2 NORMALLY CLOSED



\* Point from which the positive opening is assured

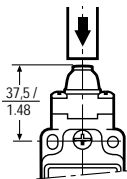
\*\* Positive opening occurs at operating position. But to meet IEC/EN 60947-5-3 which requires a dielectric gap of 2,5 kV, positive opening is assured at\*.

Actuator Types

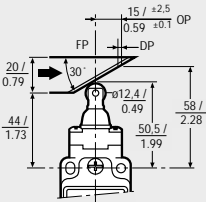


**A1B**  
Additional  
levers  
available  
(see page 208)

Side Rotary, metal roller



Top pin plunger

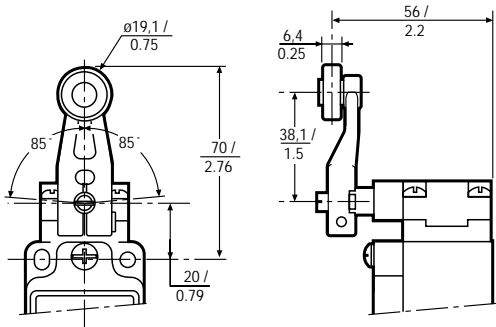


Top roller plunger

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

GSA



Side Rotary Roller Lever  
A1B Metal Roller

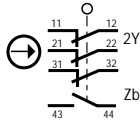
Figure 1

47

XXX

GSS

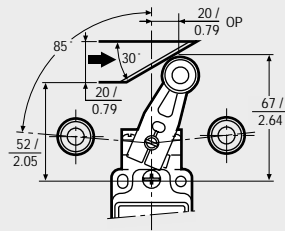
## Slow-Action Contacts 3 NORMALLY CLOSED/ 1 NORMALLY OPEN BREAK BEFORE MAKE



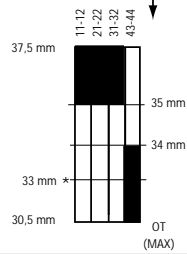
## Actuator Types



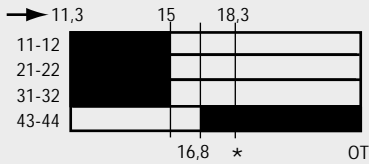
(F.P.) 0°	(R.P.)
(O.P.1) 26°	(D.T.)
(O.P.2) 32°	(*) 38°
	(O.T.) 71° to 85°



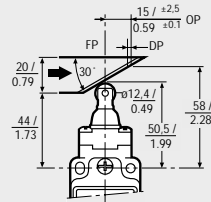
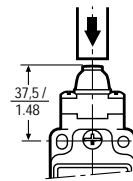
Side Rotary, metal roller



Top pin plunger



Top roller plunger



A1B

B

C

▲ Low Energy Contacts **47**

Note: See page 197

GS

XXX



## GSC EN 50047

### Safety Metal Standard

#### Technical Data

<b>Mechanical life</b>	up to 15 million operations
<b>Degree of protection</b>	IP 66 NEMA/UL type 1, 4, 12, 13
<b>Temperature range</b>	<i>Operating:</i> -25 °C to +85 °C / -13 °F to +185 °F <i>Storage:</i> -40 °C to +85 °C / -40 °F to +185 °F

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

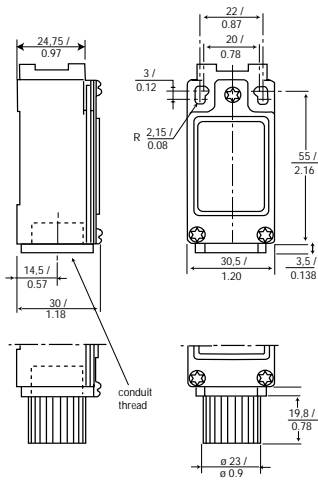
<b>Vibration</b>	10 g conforming to IEC 68-2-6
------------------	-------------------------------

<b>Shock</b>	50 g conforming to IEC 68-2-27
--------------	--------------------------------

Terminal marking to EN 50013

\*See Standards (page 179)

Dimensions in mm / in



Note: Incorporates safety screws

**Conduit Thread**

**A** = 1/2" NPT

**C** = 20 mm

Ordering:

**GSC**

**X**

Example: GSC C 01 B

▲ Low Energy Contacts

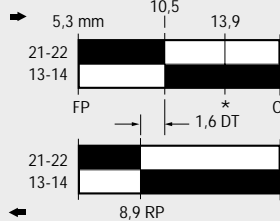
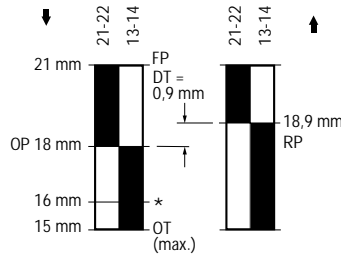
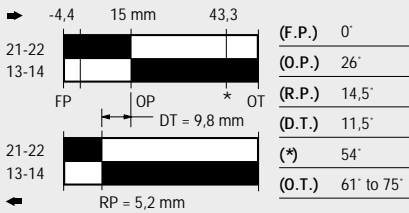
Note: See page 197

**01**

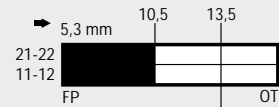
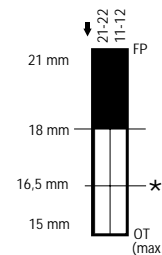
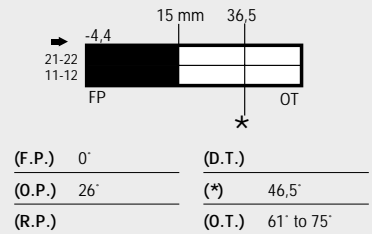
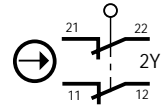
**36▲**

**XX**

#### Snap-Action Contacts 1 NORMALLY CLOSED/ 1 NORMALLY OPEN



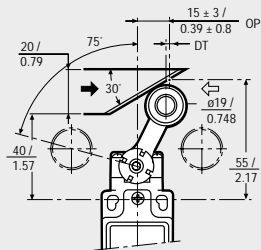
#### Slow-Action Contacts 2 NORMALLY CLOSED



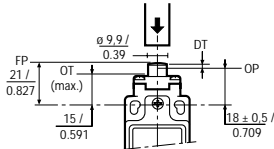
\* Point from which the positive opening is assured

\*\* 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\*.

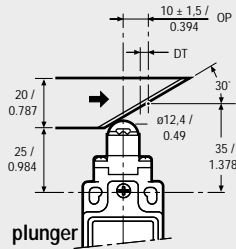
Actuator Types



Side Rotary, metal roller



Top pin plunger



Top roller plunger

A1B

Additional levers available (see page 208)

B

C

XXX

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.

GSC

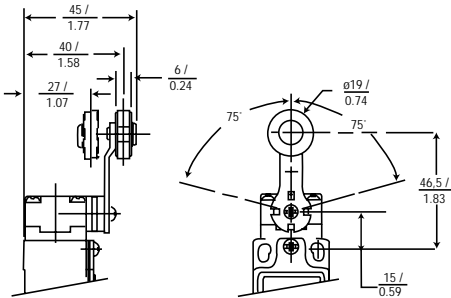


Figure 2

Side Rotary Roller Lever  
A1B Metal Roller



## GSD EN 50047

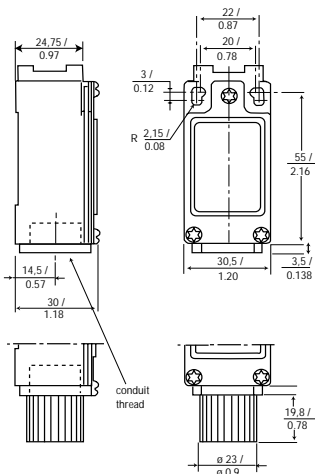
### Safety Double Insulated Standard

#### Technical Data

<b>Mechanical life</b>	up to 15 million operations
<b>Degree of protection</b>	IP66 NEMA/UL type 1, 12, 13
<b>Temperature range</b>	<i>Operating:</i> -25 °C to +85 °C / -13 °F to +185 °F <i>Storage:</i> -40 °C to +85 °C / -40 °F to +185 °F
<b>Approvals*</b>	IEC 60947-5-1 EN 60947-5-1 ac15 A600 dc13 Q300 BG, UL & CSA
<b>Vibration</b>	10 g conforming to IEC 68-2-6
<b>Shock</b>	50 g conforming to IEC 68-2-27
<b>Terminal marking</b>	to EN 50013

\*See Standards (page 179)

#### Dimensions in mm / in



Note: Incorporates safety screws

Conduit Thread

**A** = 1/2" NPT

**C** = 20 mm

Ordering:

**GSD**

**X**

Example: GSD C 01 B

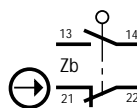
▲ Low Energy Contacts  
Note: See page 197

**01**

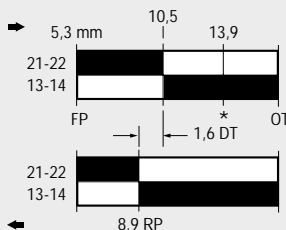
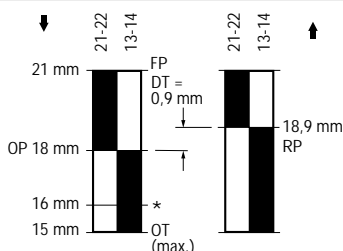
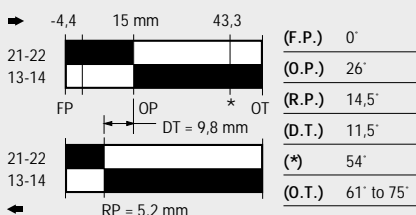
**36<sup>▲</sup>**

**XX**

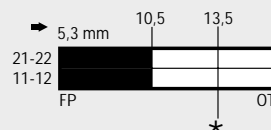
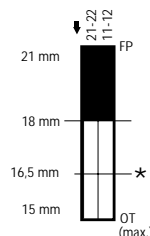
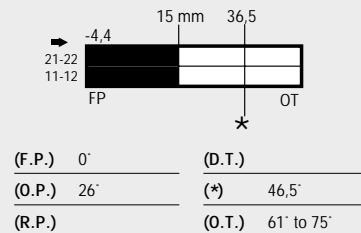
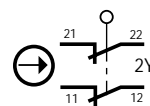
#### Snap-Action Contacts 1 NORMALLY CLOSED/ 1 NORMALLY OPEN



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



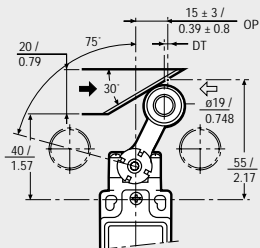
#### Slow-Action Contacts 2 NORMALLY CLOSED



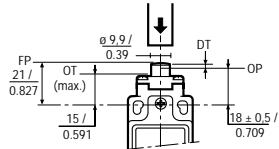
\* Point from which the positive opening is assured

\*\* 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\*.

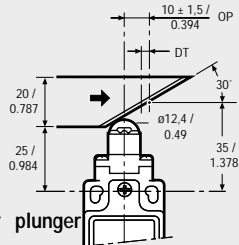
Actuator Types



Side Rotary, metal roller



Top pin plunger



Top roller plunger

A1B

Additional levers available (see page 208)

B

C

XXX

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.

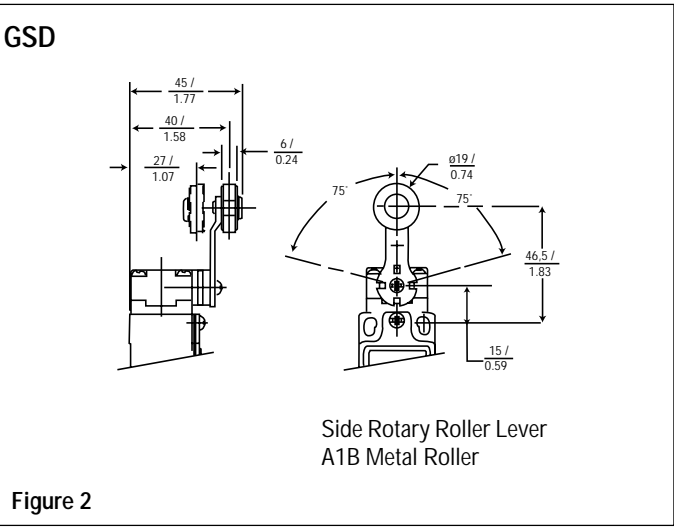


Figure 2



## 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

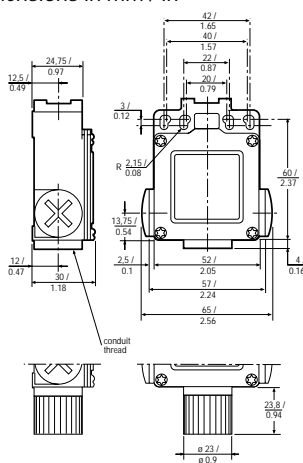
**Vibration** 10 g conforming to IEC 68-2-6

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

**Terminal marking** to EN 50013

\*See Standards (page 179)

Dimensions in mm / in



Note: Incorporates safety screws

**Conduit Thread**

**A** = 1/2" NPT

**C** = 20 mm

Ordering:

**GSE**

**X**

▲ Low Energy Contacts

Note: See page 201

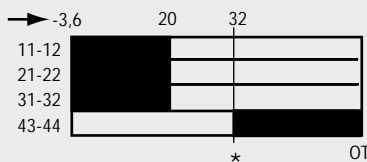
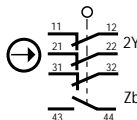
**47▲**

**XX**

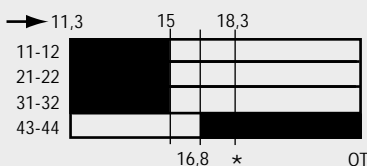
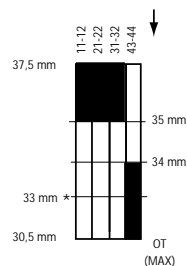
**XXX**

Example: GSE C 20 B

**Slow-Action Contacts**  
3 NORMALLY CLOSED/  
1 NORMALLY OPEN  
BREAK BEFORE MAKE



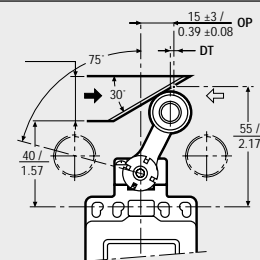
(F.P.)	0°	(R.P.)	
(O.P.1)	26°	(D.T.)	
(O.P.2)	32°	(*)	38°
		(O.T.)	71° to 85°



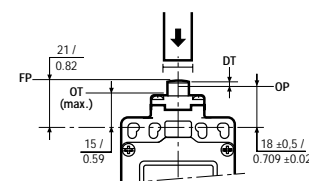
\* Point from which the positive opening is assured

\*\* 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\*.

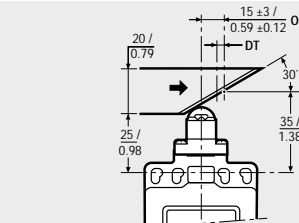
### Actuator Types



Side Rotary, metal roller



Top pin plunger



Top roller plunger

**A1B**

Additional levers available (see page 208)

**B**

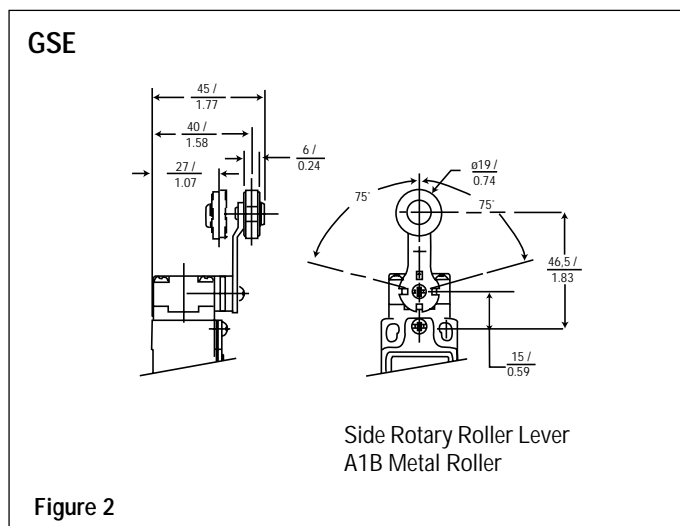
**C**

## 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.





## 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.

#### 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

#### 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

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.

#### POTENTIAL APPLICATIONS

Gates, doors, access panels or cages on machinery in:

- Hydrocarbon refining
- Chemical processing
- Agricultural equipment
- Food processing
- Grain elevators

# MICRO SWITCH™ GSX Series

## SPECIFICATIONS

Designation and Utilization Category		Rated Operational Current Ie (A) at Rated Operational Voltage Ue (V)						
		24 V	120 V	240 V	380 V	480 V	500 V	600 V
AC15	A300	—	6 A	3 A	—	—	—	—
AC15	A500	—	6 A	3 A	1,9 A	1,5 A	1,4 A	—
AC15	A600	—	6 A	3 A	1,9 A	1,5 A	1,4 A	1,2 A
DC13	Q300	2,8 A	0,55 A	0,27 A	—	—	—	—

<b>Rated thermal current (Ith)</b>	10 A	<b>Sealing</b>	IP67; NEMA 1, 3, 4, 12, 13
<b>Rated impulse withstand (Uimp)</b>	2500 V	<b>Pollution degree</b>	3
<b>Rated insulation voltage (Ui)</b>	300 V, 500 V, 600 V	<b>Operating temperature range</b>	-40 °C to 70 °C [-40 °F to 158 °F]
<b>Short-circuit protective device (type/maximum rating)</b>	Class J fuse (10 A/600 V)	<b>Expected mechanical life</b>	1,000,000 operations
<b>Conditional short-circuit current</b>	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/EN60947-1, IEC/EN60947-5-1.

# Explosion-Proof Safety Switch

## NOMENCLATURE TREE MICRO SWITCH™ GSX Series Nomenclature

GSX	A	16	A	1	B	
Switch type <sup>(No. 1)</sup>	Housing (conduit)	Basic switch	Head	Actuator	Actuator options	Modifications/ Specials
Explosion-proof positive break series	<b>A</b> 0.5 in NPT <b>B</b> PG 13.5 <b>C</b> 20 mm <b>D</b> PF 1/2	01 Snap action, 1NC/1NO 03 Slow acting, 1NC/1NO Break before make 04 Slow acting, 1NC/1NO Make before break 06 Slow acting, 2NC 07 Snap action, 1NC/1NO, gold 20 Snap action, 2NC/2NO 22 Snap action, 2NC/2NO, gold 33 Slow acting, 1NC/1NO Break before make, gold 34 Slow acting, 1NC/1NO Make before break, gold 36 Slow acting 2NC, gold 40 Slow acting, 4NC 41 Slow acting, 4NC, gold 42 Slow acting, 2NC/1NO Break before make 43 Slow acting, 2NC/1NO Break before make, gold 44 Slow acting, 2NC/2NO Break before make 45 Slow acting, 2NC/2NO Break before make, gold 46 Slow acting, 3NC/1NO Break before make 47 Slow acting, 3NC/1NO Break before make, gold	<b>A</b> Side rotary momentary <b>B</b> Top pin plunger <b>C</b> Top roller plunger <b>D</b> Top roller lever	<b>1</b> Std. fixed length roller <b>3</b> Yoke roller <b>5</b> Offset roller	<b>A</b> 19 x 6,35 [0.75 x 0.25] nylon roller <b>C</b> 25,4 x 12,7 [1 x 0.5] nylon roller <b>D</b> 38,1 x 6,35 [1.5 x 0.25] nylon roller <b>E</b> 19 x 6,35 [0.75 x 0.25] bronze roller <b>W</b> 38,1 x 12,7 [0.75 x 0.5] rubber roller <b>Y</b> 50,9 x 12,7 [2.0 x 0.5] rubber roller	<b>1</b> Clockwise rotation <b>2</b> Counterclock rotation <b>3</b> Head assb. w/ actuator to right side <b>4</b> Head assb. w/ actuator to left side <b>5</b> Head assb. w/ actuator to mtg. surf. <b>6</b> Roller perpendicular to mounting surface <b>C</b> Prelead cable <b>Q</b> Connector

### NOTES

(1) Not all possible combinations are available; these are only guidelines.

# MICRO SWITCH™ GSX Series

Figure 1. Side rotary head with standard roller

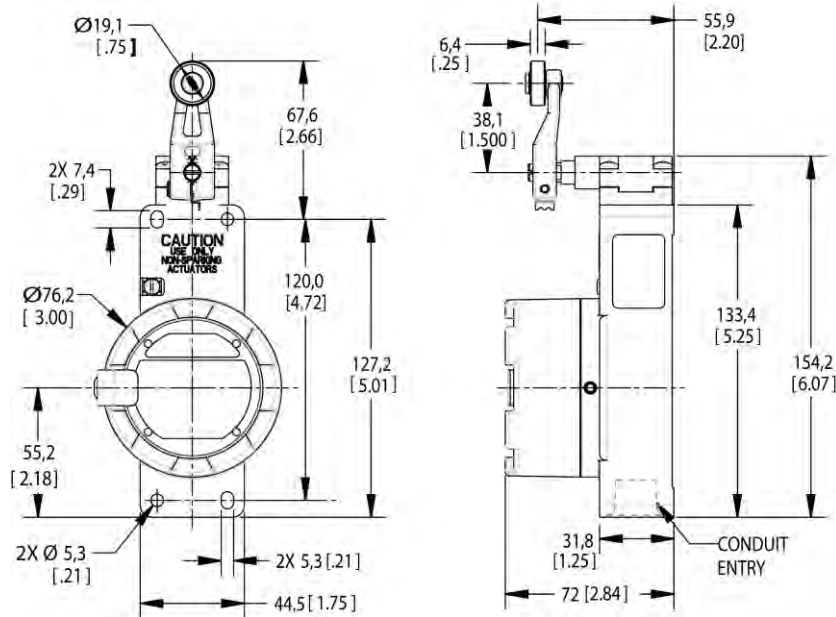


Figure 2. Pin plunger

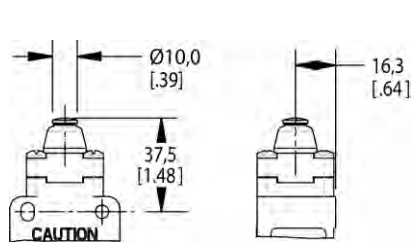


Figure 3. Top roller plunger

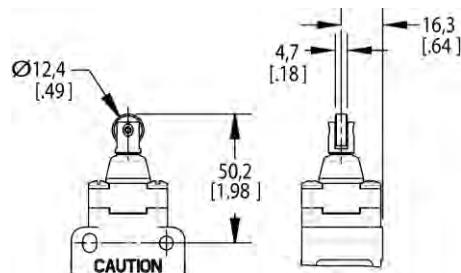
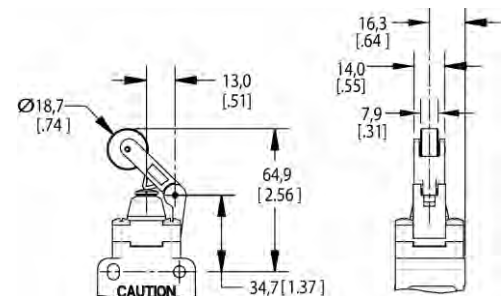


Figure 4. Top roller lever



## ORDER GUIDE

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

### 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:

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**Internet:** [www.honeywell.com/sensing](http://www.honeywell.com/sensing)

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+65 6445-3033 Fax

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+44 (0) 1698 481676 Fax

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004764-2-EN IL50 GLO Printed in USA

June 2009

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# Honeywell

# 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

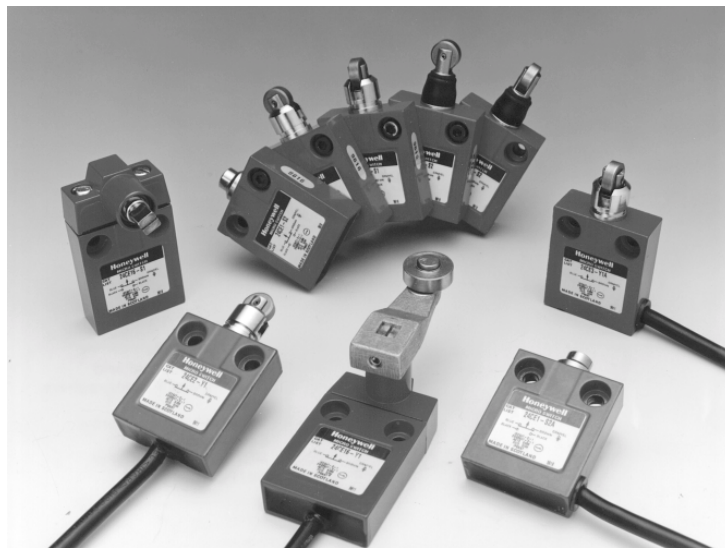
- Suitable for applications where space is at a premium
- Fast and easy to install
- Suitable for difficult operating environments
- Application flexibility
- Enhanced choice for application
- Multiple plunger capability



(924CE Series Only)



(24CE Series Only)



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.

24CE/924CE

### 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

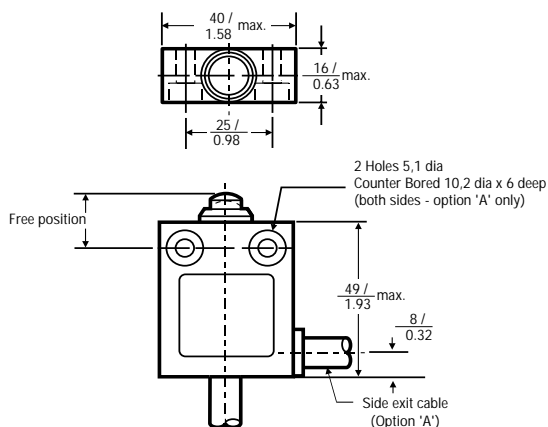
**Temperature range** *Operating:* 0 °C to +70 °C /  
32 °F to +160 °F

**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



**Cable Type**  
3 or 5 x 0,75 mm<sup>2</sup> harmonised CENELEC cable.

Ordering:

**24CE**

Example: 24CE18-Y1A

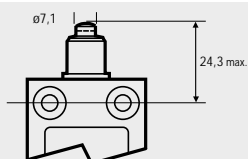
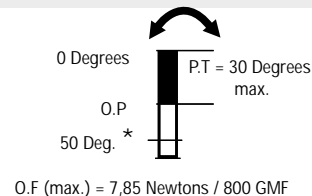
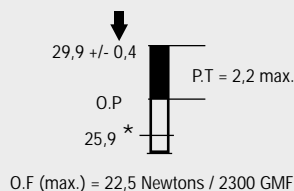
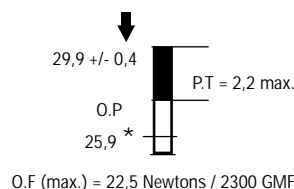
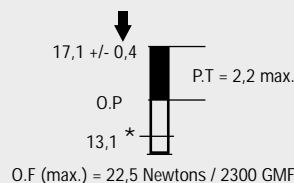
#### Actuator Types

#### Slow Action Contacts 1 Normally Closed



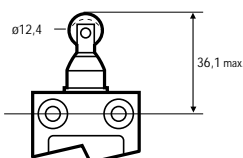
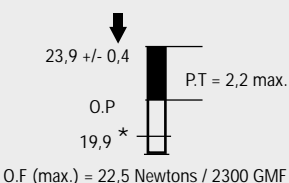
■ Circuit closed

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



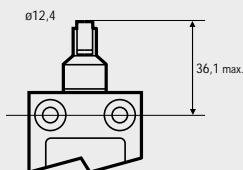
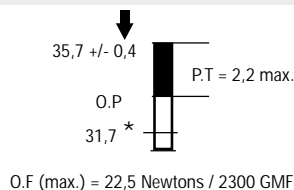
Pin Plunger (Boot Sealed)

**18**



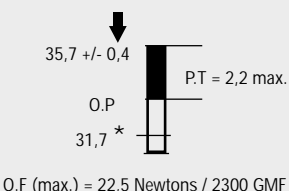
Roller Plunger Parallel (Boot Sealed)

**31**



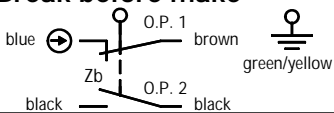
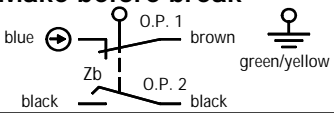
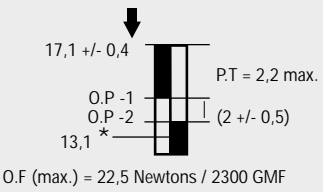
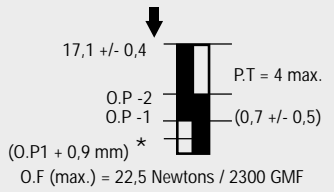
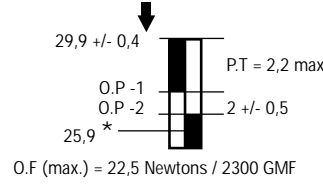
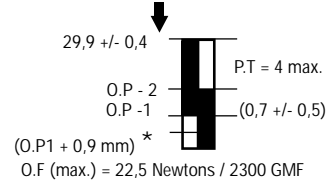
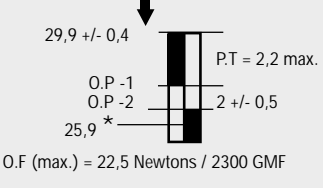
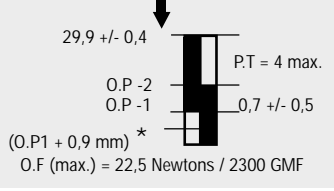
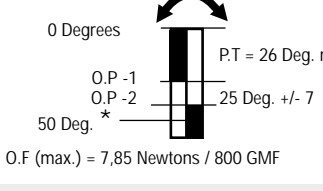
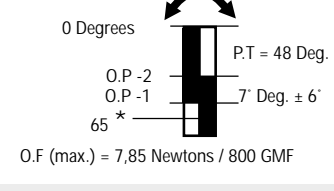
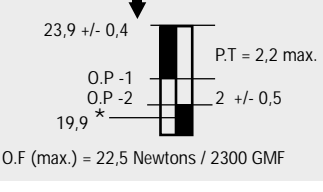
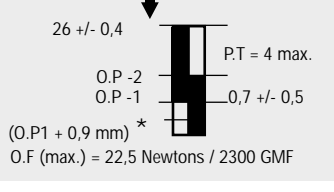
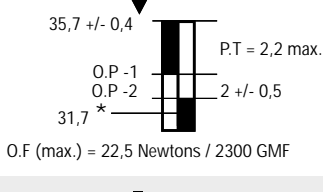
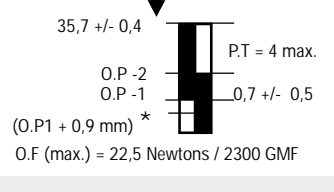
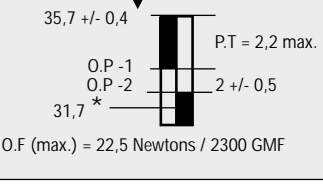
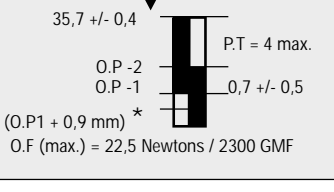
Roller Plunger Perpendicular (Boot Sealed)

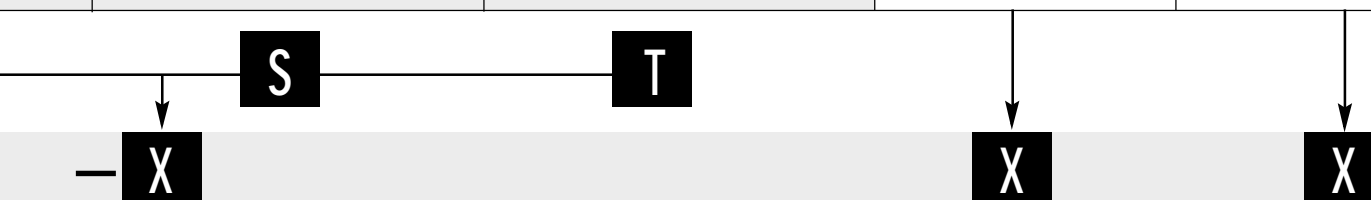
**55**



**Y**

**X OR XX**

<b>Slow Action Contacts</b> <b>1 Normally Closed/</b> <b>1 Normally Open</b> <b>Break before make</b> 	<b>Slow Action Contacts</b> <b>1 Normally Closed/</b> <b>1 Normally Open</b> <b>Make before break</b> 	<b>Cable Length</b> <b>(in metres)</b>	<b>Option Codes</b> <b>Available</b>
		<b>Specify cable length in 1 metre increments e.g.</b> <b>1 = 1 metre</b> <b>2 = 2 metre etc.</b>	<b>A: Side Exit Cable.</b>
			
			
			
			
			
			



24CE/924CE

## 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

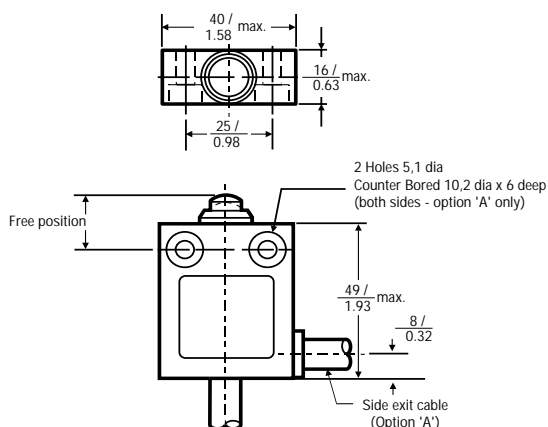
**Temperature range** *Operating:* 0 °C to +105 °C /  
32 °F to +221 °F

**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 SJTO CABLE

**Ordering:**

**924CE**

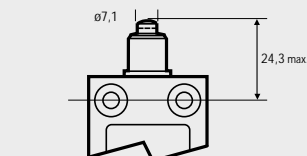
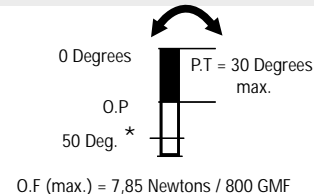
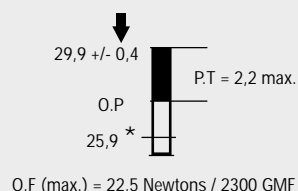
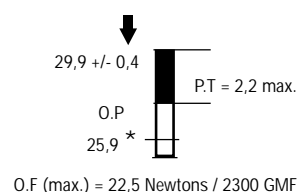
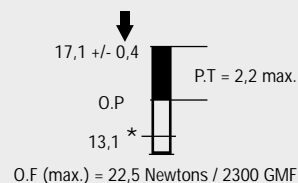
Example: 924CE18-Y3A

#### Actuator Types

#### Slow Action Contacts 1 Normally Closed

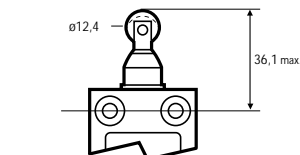
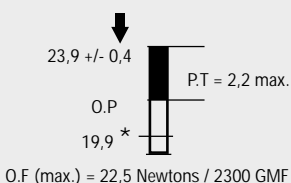


— Circuit closed  
\*Positive opening to IEC/EN 60947-5-1-3



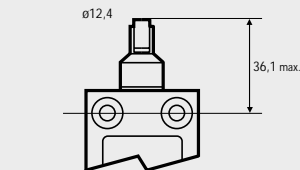
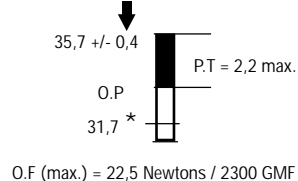
Pin Plunger (Boot Sealed)

**18**



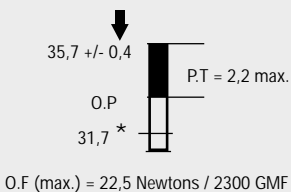
Roller Plunger Parallel (Boot Sealed)

**31**



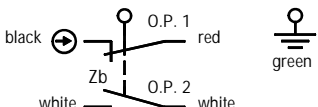
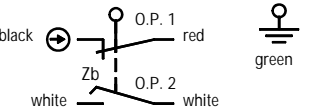
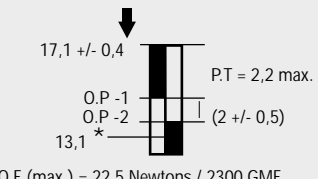
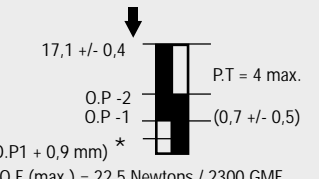
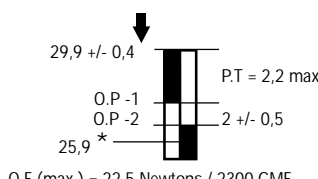
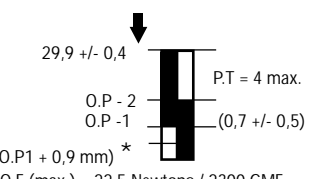
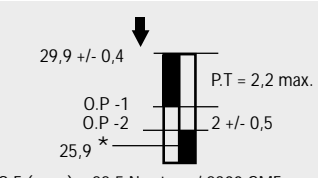
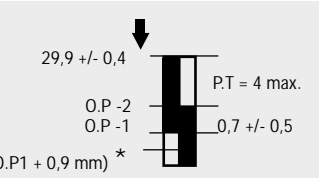
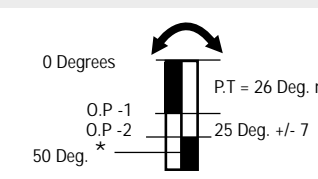
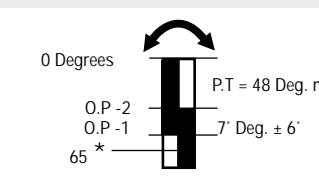
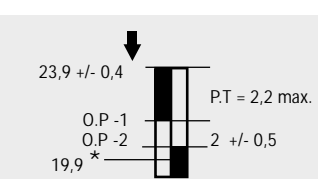
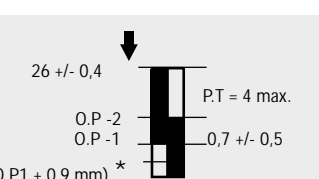
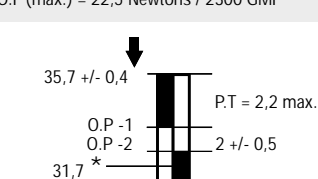
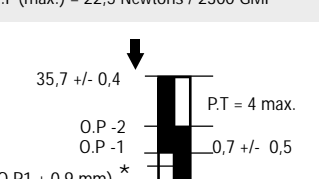
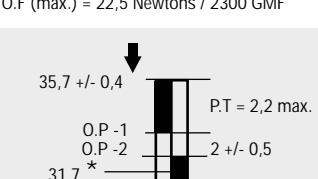
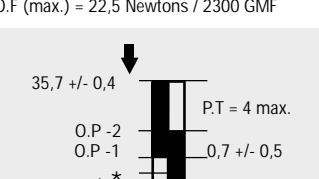
Roller Plunger Perpendicular (Boot Sealed)

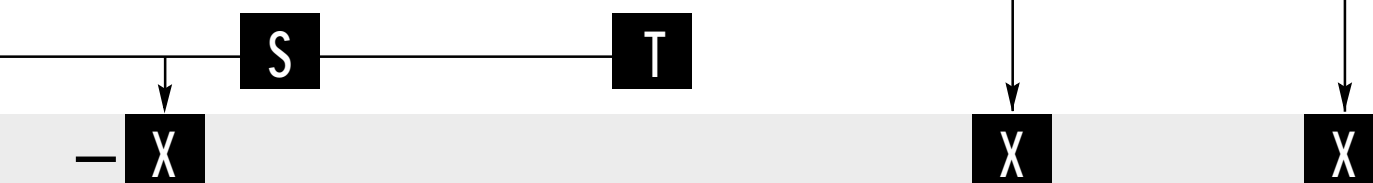
**55**



**Y**

**X OR XX**

Slow Action Contacts 1 Normally Closed/ Break before make	Slow Action Contacts 1 Normally Closed/ Make before break	Cable Length (in feet)	Option Codes
		Specify cable length in 3 feet increments e.g. 3 = 3 feet 6 = 6 feet etc.	A: Side Exit Cable
			
			
			
			
			
			
			



24CE/924CE



## 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 FFS 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

---

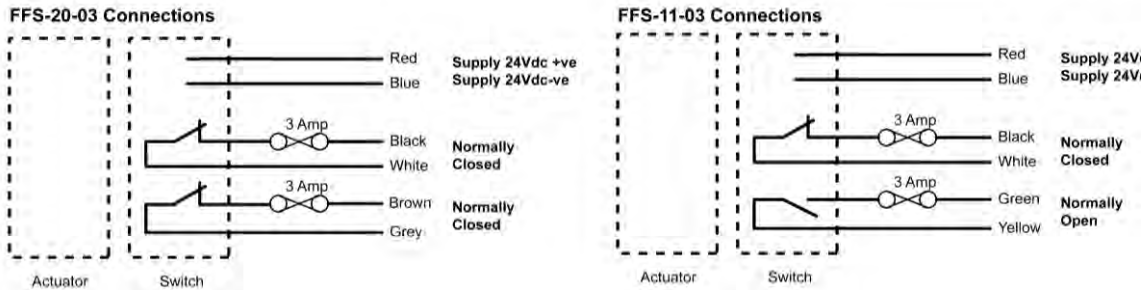
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicon equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery

# FFS Series

## TECHNICAL SPECIFICATIONS

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

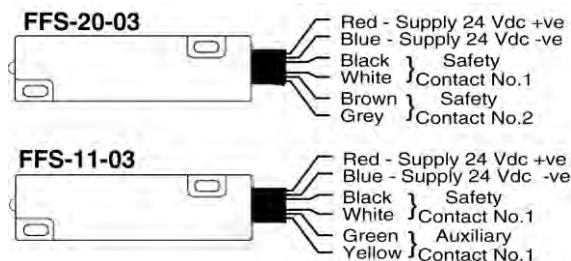
## FFS CONTACTS



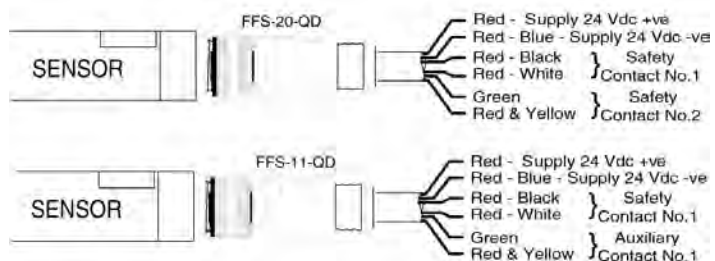
Contact configurations show under closed condition for guard device.

## FFS CONNECTIONS

### FFS PRE-WIRED CONNECTIONS

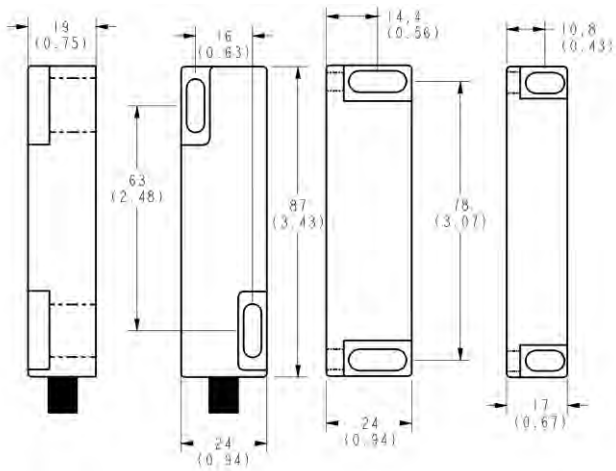
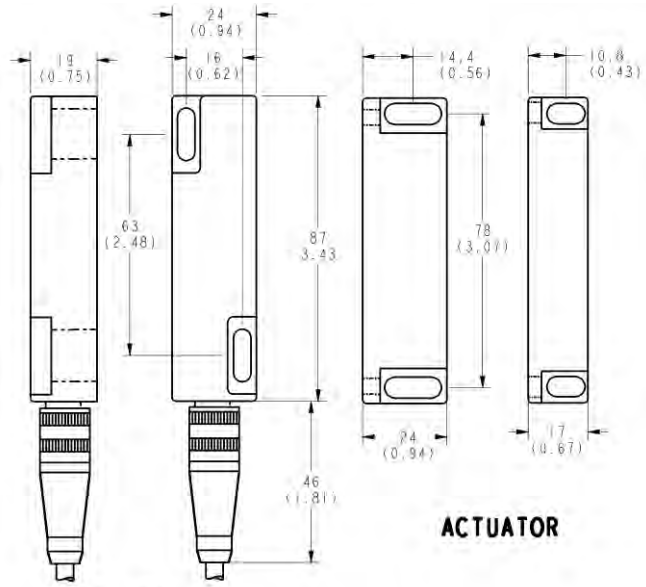


### FFS QUICK CONNECT CONNECTIONS



# Electronic Standalone Non-Contact Safety Switch

## DIMENSIONS

FFS PRE-WIRED mm[in]	FFS QUICK CONNECT mm[in]
 <p><b>SWITCH</b>                      <b>ACTUATOR</b></p>	 <p><b>SWITCH</b>                      <b>ACTUATOR</b></p> <p>(WITH M12 BRAD HARRISON CONNECTOR)</p>

## ORDER GUIDE

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

## **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.

## **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.**

### **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](mailto:info.sc@honeywell.com)

**Internet:** [www.honeywell.com/sensing](http://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

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[www.honeywell.com](http://www.honeywell.com)

# Honeywell

004747-2-EN IL50 GLO Printed in USA  
June 2009  
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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



(Pending)



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. I, Groups E, F, and G. The CLSX is designed to meet the requirements of EN50014 and EN50018; certification is pending.

## **⚠ 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.**

CLS/CLSX/2CLS

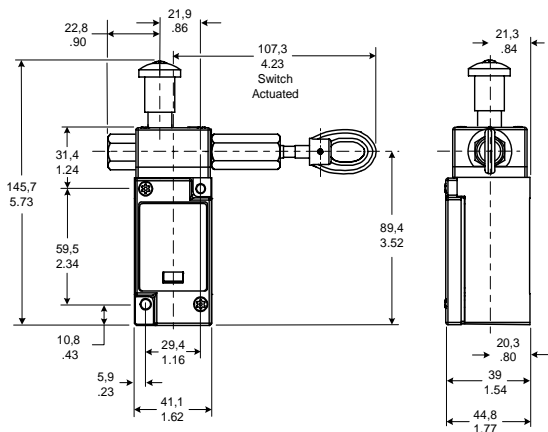
# CLS - Metal Body Single Head Cable Pull Safety Switch

## Technical Data

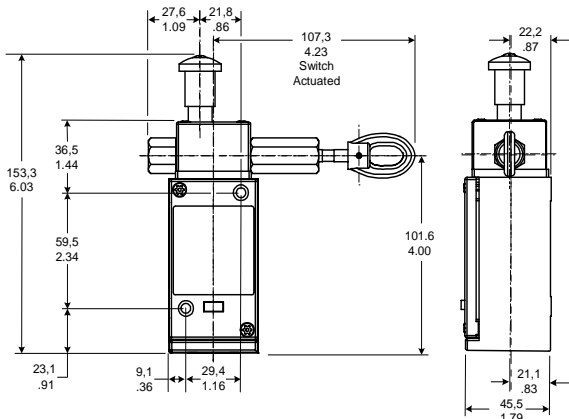
<b>Mechanical life</b>	25,000 operations maximum
<b>Degree of protection</b>	IP 67
	NEMA/UL type 1, 3, 4 and 13
<b>Temperature range</b>	Operating: -1 to +70°C (30 to 158°F)
<b>Approvals and</b>	IEC/EN 60947-5-1 and EN 418 Emergency stop device, UL listed, CSA certified, CE marked.
<b>Operating rating</b>	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
<b>Directives Compliance</b>	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)

## Standard Body



## Switch Type 9 Body



## Ordering:

**CLS**

Example: CLSA4T-3

## Conduit Thread

**A** = PG 13.5

**B** = 1/2" NPT

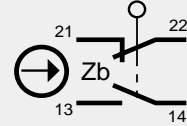
**C** = 20 mm

**D** = PF 1/2"

**X**

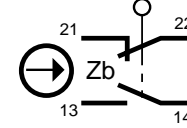
## Switch Type

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



**4**

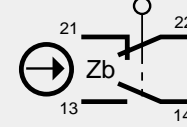
Slow acting, break before make (BBM),  
1 Normally Closed/1 Normally Open



**5**

240V Neon Indicator

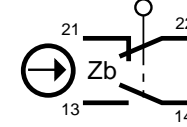
Slow acting, break before make (BBM),  
1 Normally Closed/1 Normally Open



**6**

120V Neon Indicator

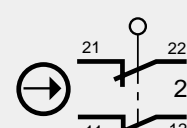
Slow acting, break before make (BBM),  
1 Normally Closed/1 Normally Open



**7**

24V LED Indicator

Direct Acting, 2 Normally Closed



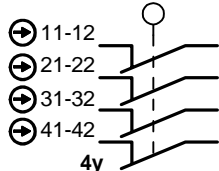
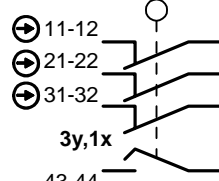
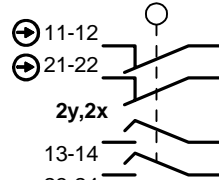
**8**

4 Circuit Slow Acting

(Must include modification  
code A, B or E)

**9**

**X**

	Head Code	Modification Code for Contact Configuration When Using a 4 Circuit Slow Acting (Switch Type 9) Only	Modification Code for Indicator Type When Using a 4 Circuit Slow Acting (Switch Type 9) Only	Modification Code for Head Orientation
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	<b>T</b>	4 Normally Closed  <b>A</b>	<b>N</b>	<b>1</b> Head assembled with actuator to the left
		3 Normally Closed/ 1 Normally Open  <b>B</b>	<b>M</b>	<b>2</b> Head assembled with actuator to the front
		2 Normally Closed/ 2 Normally Open  <b>E</b>	<b>P</b>	<b>3</b> Head assembled with actuator facing to the back
		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	<b>T</b>	<b>X</b>	<b>X</b>

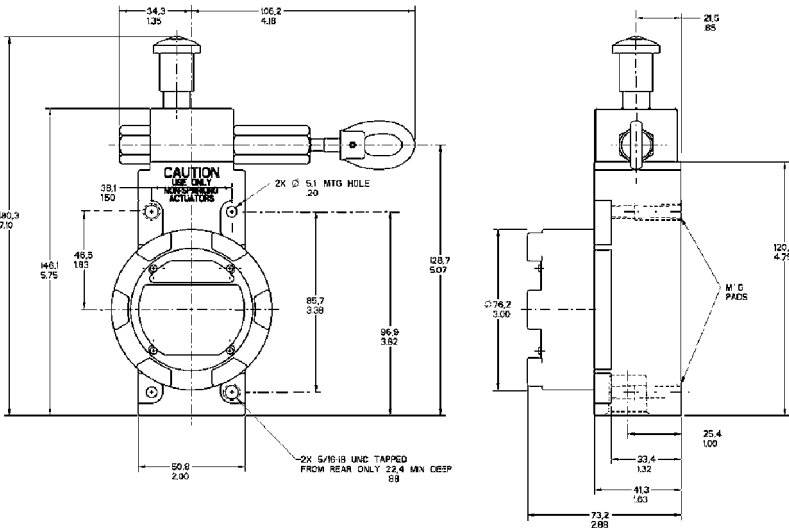
CLS/CLSX/2CLS

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	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 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)



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

Ordering:

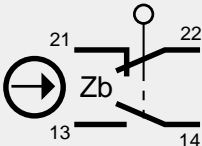
CLSX

Example: CLSXB9T-B

X

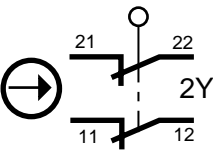
Switch Type

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



4

Direct Acting, 2 Normally Closed



8

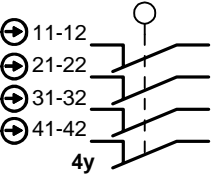
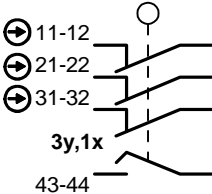
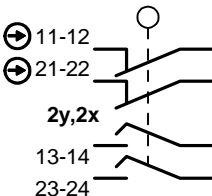
4 Circuit Slow Acting

(Must include modification code  
A, B or E)

9

X

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

Head Code	Modification Code for Contact Configuration When Using a 4 Circuit Slow Acting (Switch Type 9) Only	Modification Code for Head Orientation
<div>T</div>	<div>4 Normally Closed</div> <div></div> <div>A</div>	<div>Head assembled with actuator to the left</div> <div>1</div>
	<div>3 Normally Closed/ 1 Normally Open</div> <div></div> <div>B</div>	<div>Head assembled with actuator to the front</div> <div>2</div>
	<div>2 Normally Closed/ 2 Normally Open</div> <div></div> <div>E</div>	<div>Head assembled with actuator facing to the back</div> <div>3</div>
	<div>Note: Required for Switch Type 9. Leave the modification code blank for other switch types.</div>	<div>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.</div>
<div>Note: •Standard head orientation is with actuator to the right •Unit may be field modified to adjust head orientation</div>	<div>T</div>	<div>X</div>
	<div>—</div>	<div>X</div>
	<div>X</div>	<div>X</div>

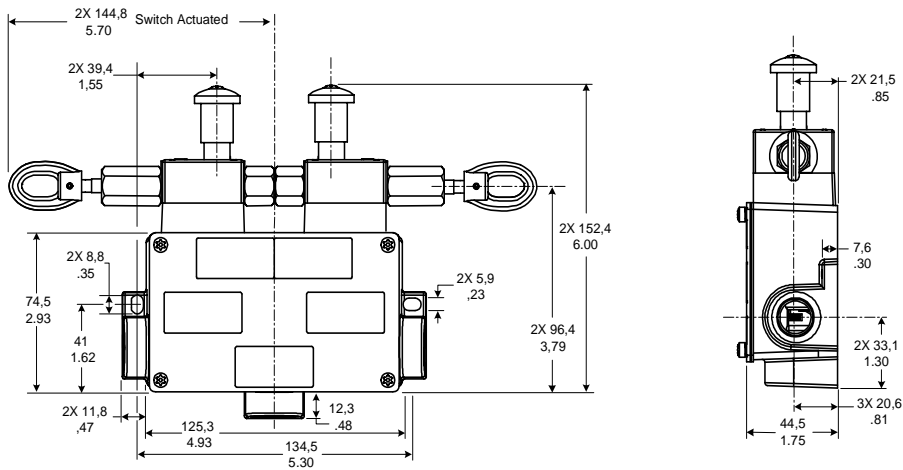
CLS/CLSX/2CLS

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	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 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)



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

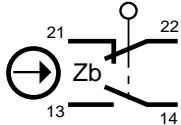
Ordering:

2CLS	X	X
------	---	---

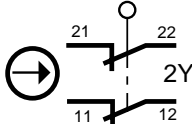
Example: 2CLSA1T1

Primary Switch Type  
Located on left hand side  
of switch body

Slow Acting,  
1 Normally Closed/  
1 Normally Open



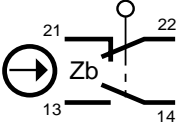
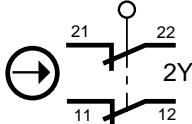
Slow Acting,  
2 Normally Closed



1

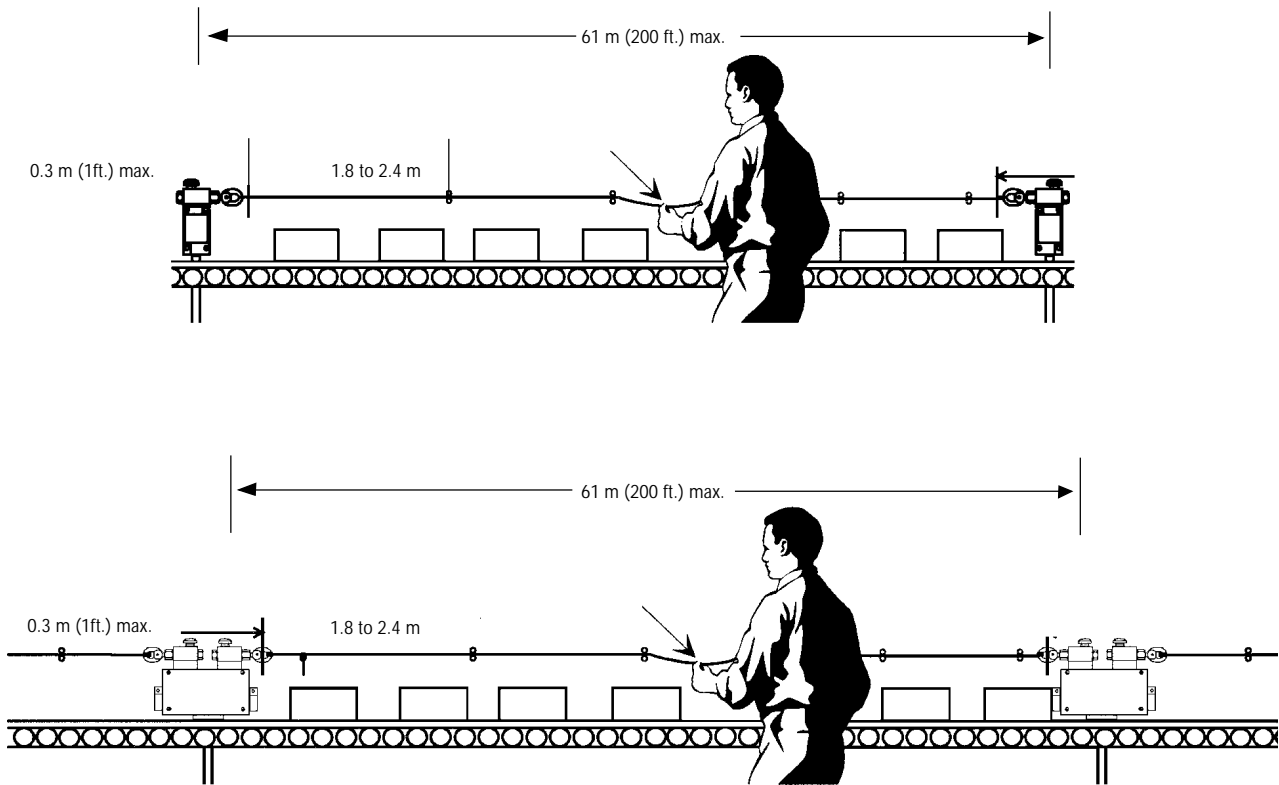
2

X

Head Code	Auxiliary Switch Type Located on right hand side of switch body	Indicator Code
T	Slow Acting 1 Normally Closed/1 Normally Open 	120V – 6W incandescent Red Pilot Light A
	Slow Acting 2 Normally Closed 	120V Neon Indicator B
	No switch 9	240V Neon Indicator C
		24V LED Indicator D
Note: Leave the Indicator Code blank if indicator is not required.		
T	X	X

CLS/CLSX/2CLS

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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

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

- Notes:
1. CLS/CLSX includes 1 turnbuckle and 1 endspring.  
2CLS includes 2 turnbuckles and 2 endsprings.

# CPS Series

## Cable Pull Safety Switch



### FEATURES

- Direct opening action  $\rightarrow$  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  $\pm 17^{\circ}\text{C}$  ( $\pm 30^{\circ}\text{F}$ ). 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



(Applied for)



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

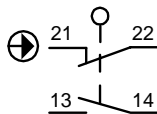
**Vibration** 10 Hz - 500 Hz, 5 g

**Shock** 15 g

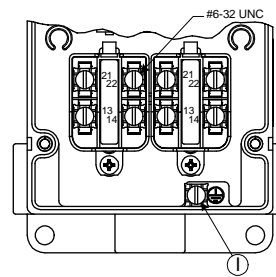
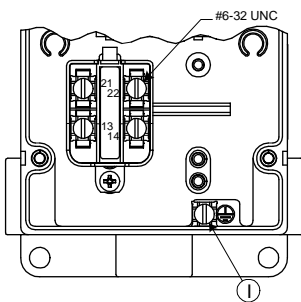
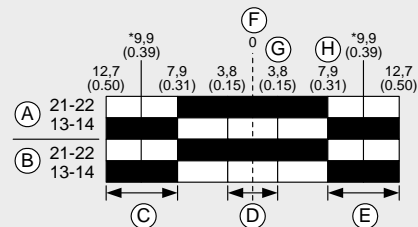
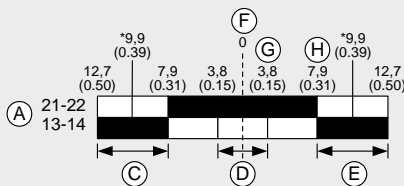
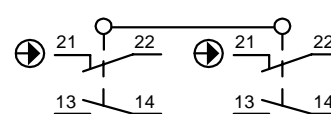
**Contact material** Silver standard  
Gold plated optional

**Included accessories** None

1 NORMALLY CLOSED/  
1 NORMALLY OPEN



2 NORMALLY CLOSED/  
2 NORMALLY OPEN



- A Left switch
- B Right switch
- C Slackened cable
- D Proper cable tension
- E Pulled cable
- F Cable tension = 111 N (25 lb)
- G Cable tension = 133 N (30 lb)
- H Cable tension = 178 N (40 lb)
- I Ground screw
- Contact closed
- Contact open

Conduit  
Thread

A = 1/2" NPT

C = 20 mm

Ordering:

**1CPS**

**X**

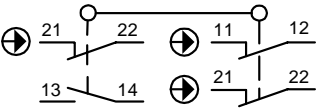
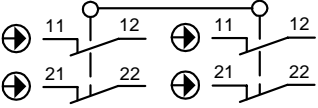
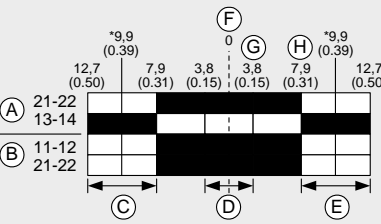
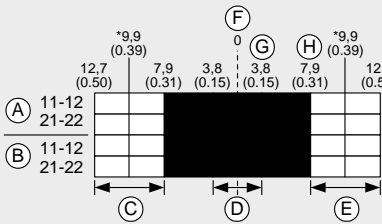
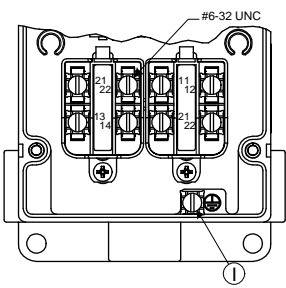
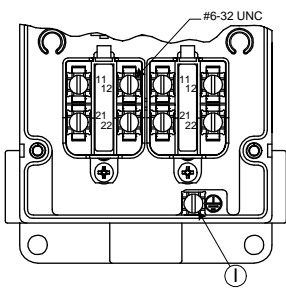
Example: 1CPSA1A

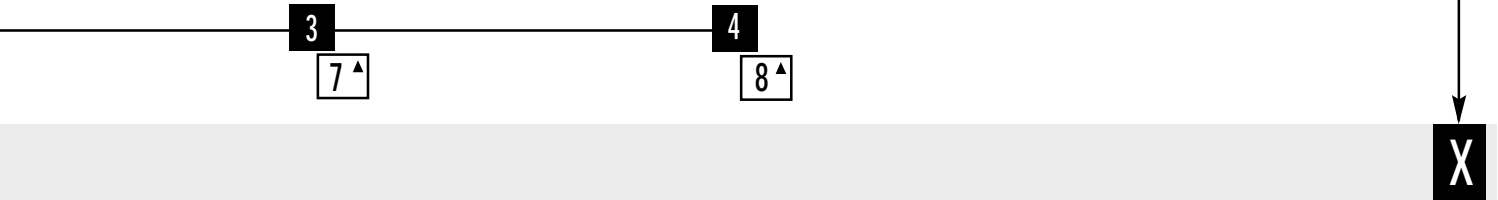
▲ Gold-plated contacts

1 5▲

2 6▲

**X**

	<p>3 NORMALLY CLOSED/ 1 NORMALLY OPEN</p> 	<p>4 NORMALLY CLOSED</p> 	<p>Indicator-Pilot Light Code</p>
			<p>A : 24 V LED</p>
			<p>B : 120 V LED</p>



## 2CPS

### 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:*  
-40 °C to +80 °C /  
-40 °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

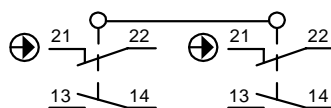
**Vibration** 10 Hz - 500 Hz, 5 g

**Shock** 15 g

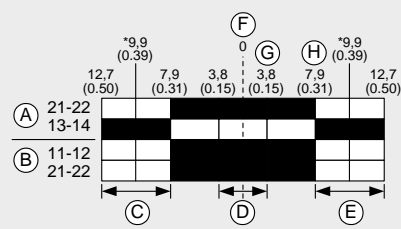
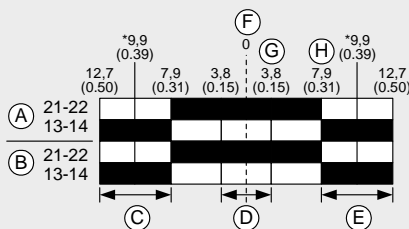
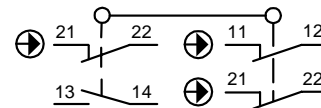
**Contact material** Gold plate  
over silver

**Included accessories** Turnbuckle(s)

2 NORMALLY CLOSED/  
2 NORMALLY OPEN

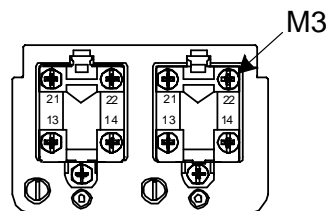
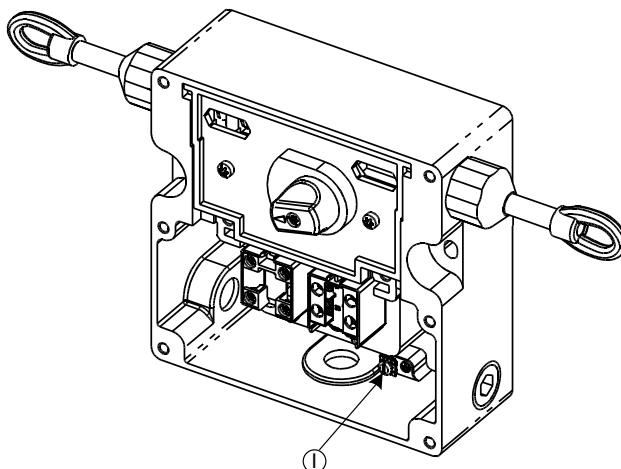


3 NORMALLY CLOSED/  
1 NORMALLY OPEN



- A Left switch
  - B Right switch
  - C Slackened cable
  - D Proper cable tension
  - E Pulled cable
  - F Cable tension = 111 N (25 lb)
  - G Cable tension = 133 N (30 lb)
  - H Cable tension = 178 N (40 lb)
  - I Ground screw
- Contact closed  
 Contact open

#### Contact blocks mounted to housing



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

Contact block mounting  
**1** = to housing  
**2** = removable with heavy duty terminals

Ordering:

**2CPS**

**X**

**X**

**A**

**B**

**X**

Example: 2CPSA1A2B

CPS

CPS



CPS

CPS

CPS

# Temperature-Span Distance Application Information

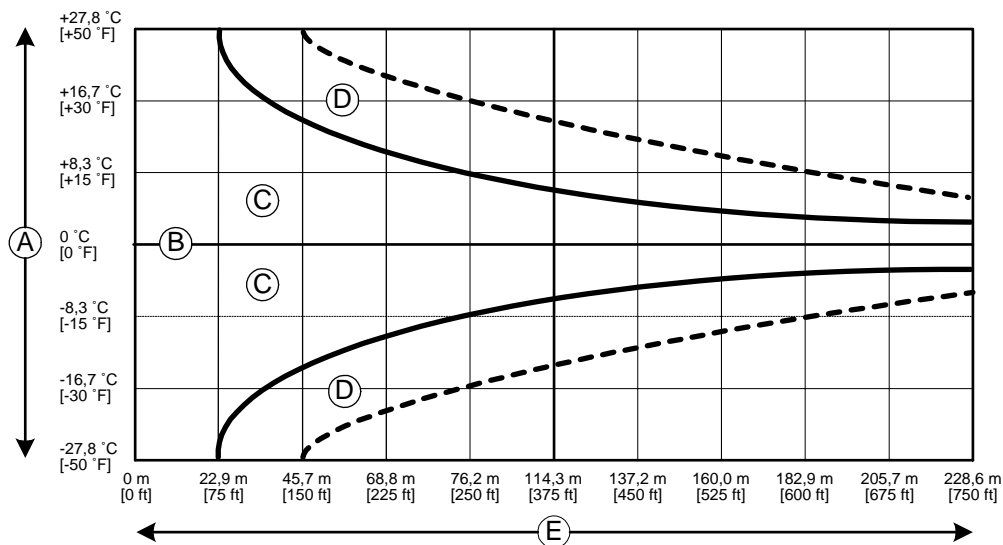
Cable Pull Switches featuring broken cable detection require pre-tensioning in order to enable the RUN condition.

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

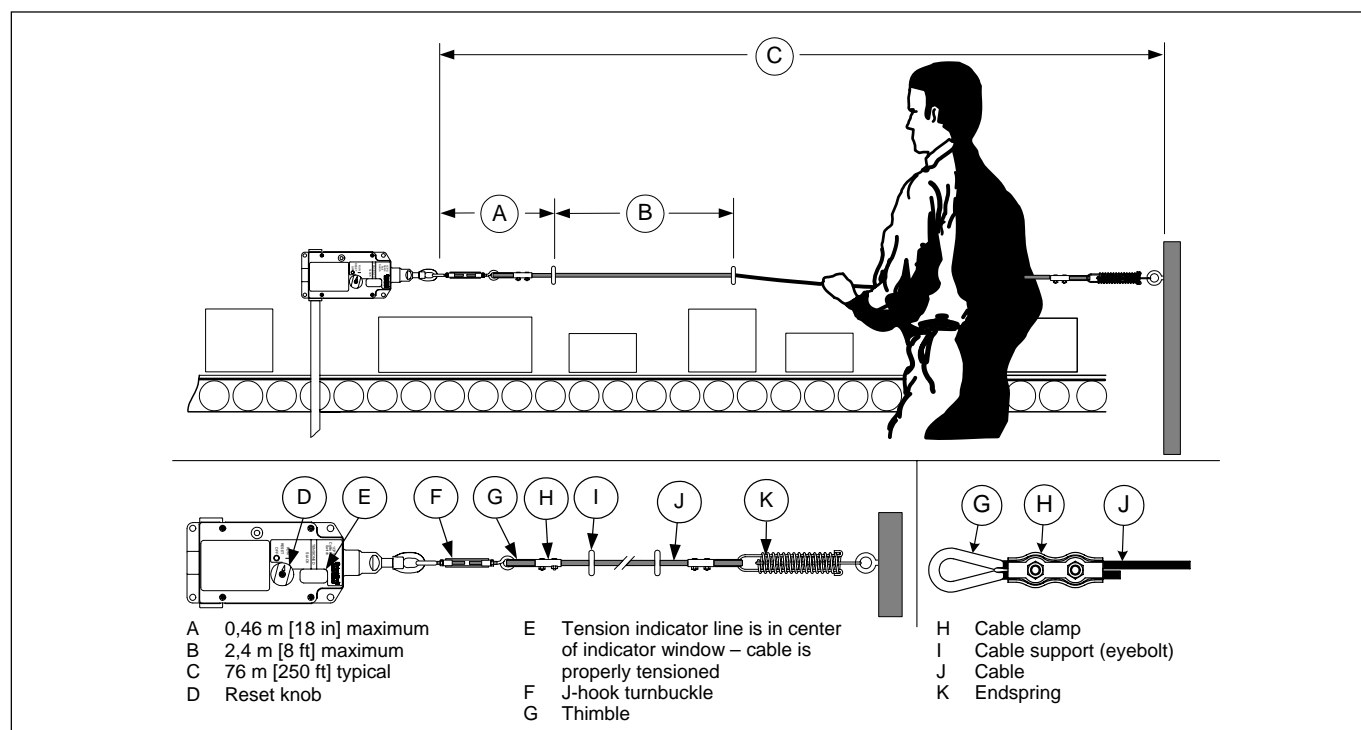
C = Cable Pull Switch usable temperature span without endspring or second CPS

D = Cable Pull Switch usable temperature span with endspring or second CPS

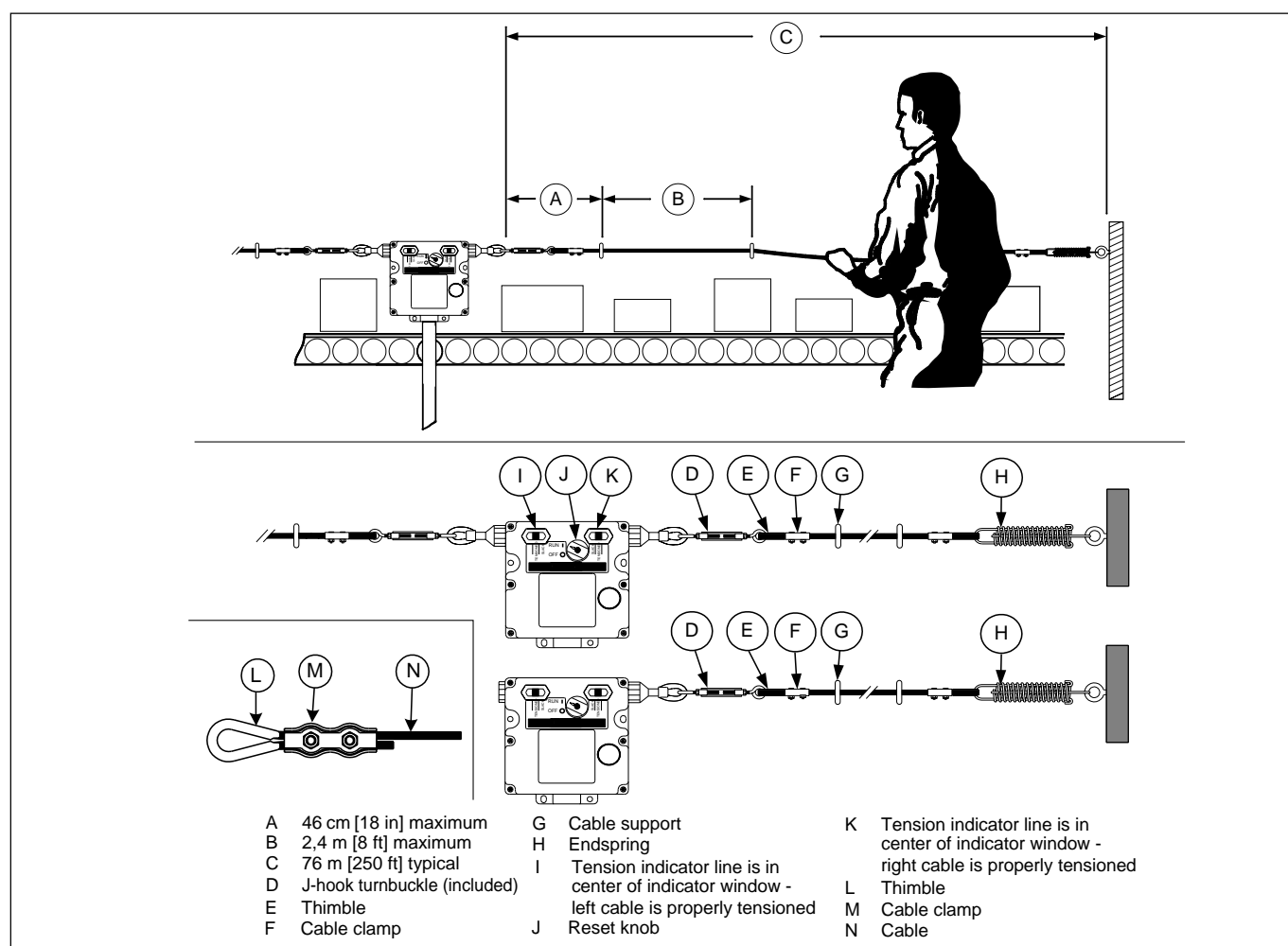
E = Cable span distance

# Application information

## 1CPS



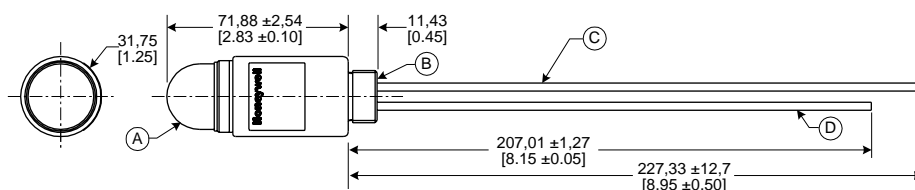
## 2CPS



# Hardware packets (available separately)

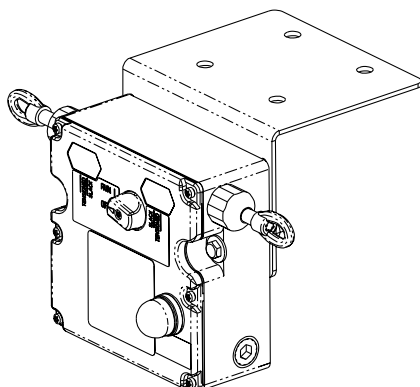
Listing	Accessory
CLSZC1	Cable - 7,6 m (25 ft) length
CLSZC2	Cable - 15,2 m (50 ft) length
CLSZC3	Cable - 30,5 m (100 ft) length
CLSZC4	Cable - 45,7 m (150 ft) length
CLSZC5	Cable - 61 m (200 ft) length
CLSZC7	Cable - 76,2 m (250 ft) length
CLSZTC	(2) Thimbles (2) Low-profile Duplex Cable Clamps
CPSZ1S	(1) Draw-bar Endspring
CPSZK1	(1) J-hook Turnbuckle with Lock Nuts (2) Thimbles (2) Low-profile Duplex Cable Clamps (16) Sets of Cable Supports ((16) 1/4-20 Eye Bolts, (32) 1/4-20 Nuts, (32) Flat Washers, (16) Lock Washers)
CPSLED24	Multicenter LED Accessory - 24 Vdc (conduit mount)
CPSLED120	Multicenter LED Accessory - 120 Vdc (conduit mount)
CPS-BRACKET	Mounting bracket (to be used with 1CPS or 2CPS)
CPSZTB	J-hook turnbuckle with lock nuts (included with 2CPS)

## CPSLED



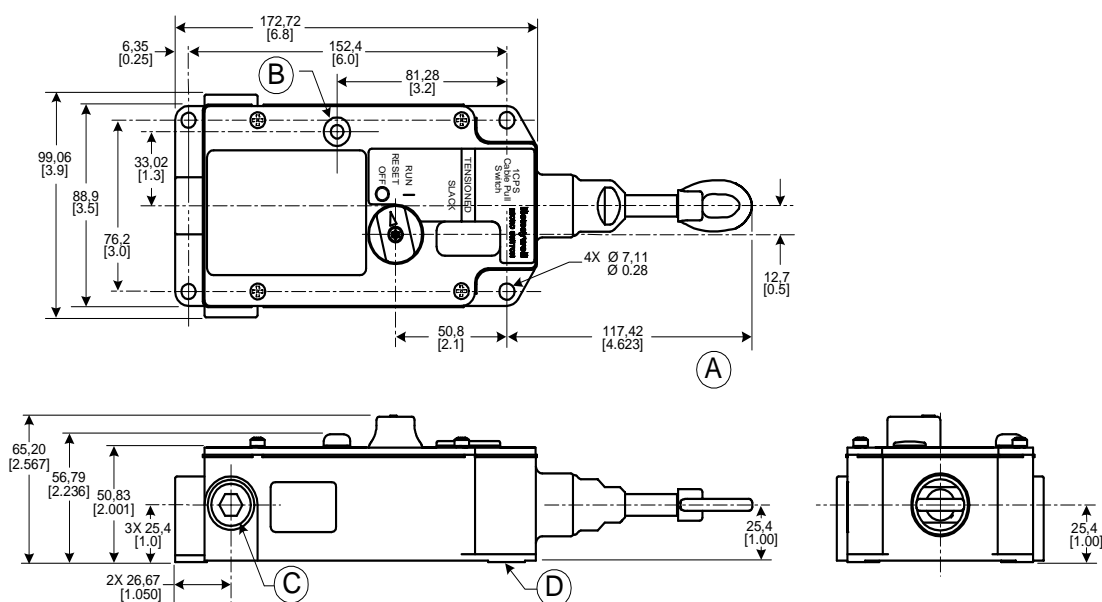
- A Multi-LED red pilot light
- B 1/2-14 NPom Thread
- C 18 AWG red PVC insulation
- D 18 AWG black PVC insulation

## CPS-BRACKET



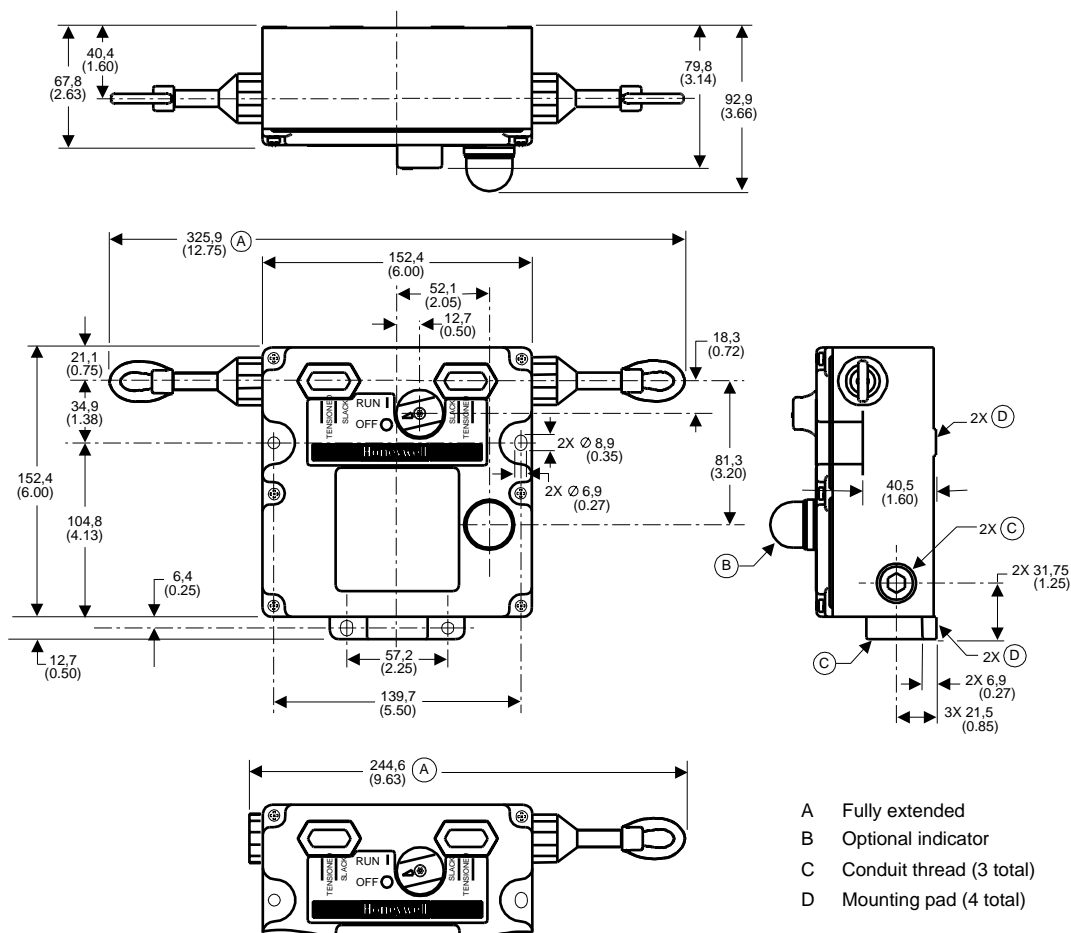
# Mounting dimensions (mm/in)

## 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 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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FAX: +(49) 69 8064 442

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# Honeywell

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USA

## 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

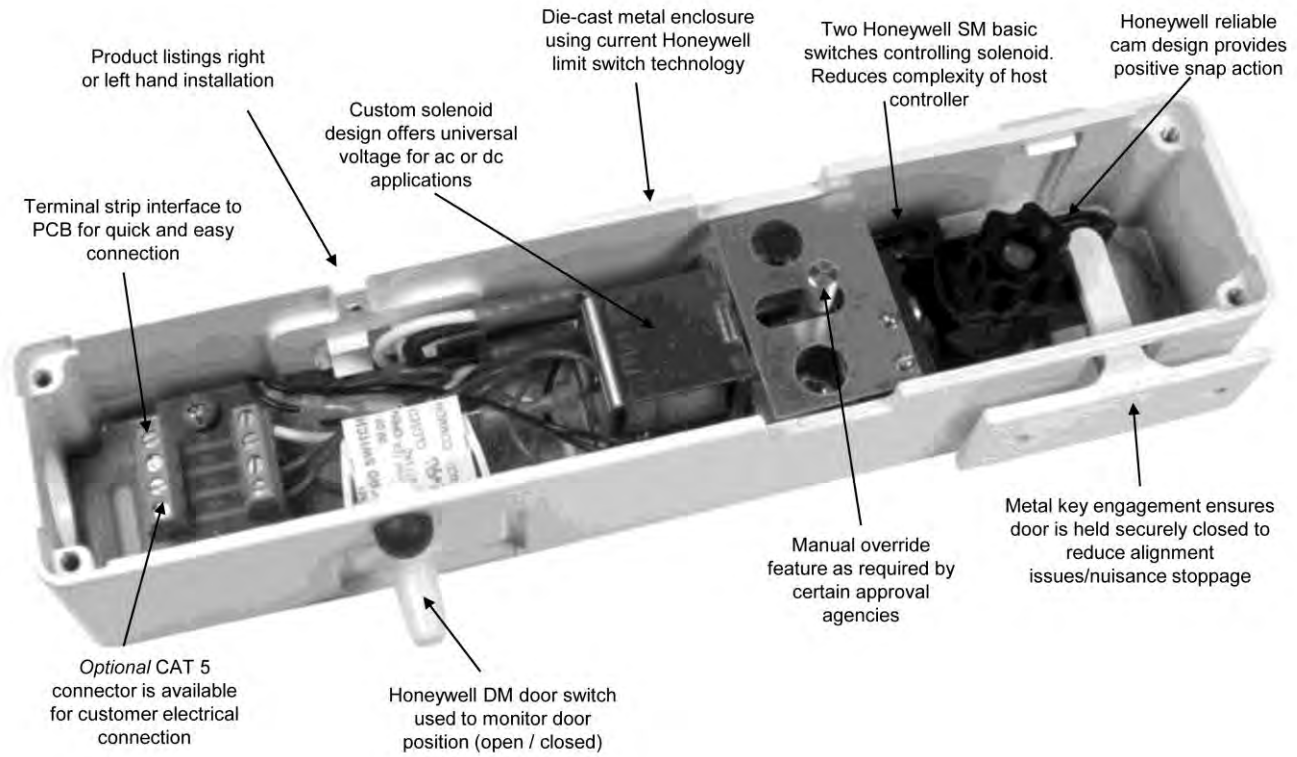
- Residential elevators
- Residential dumbwaiters
- Platform/vertical lifts

#### 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

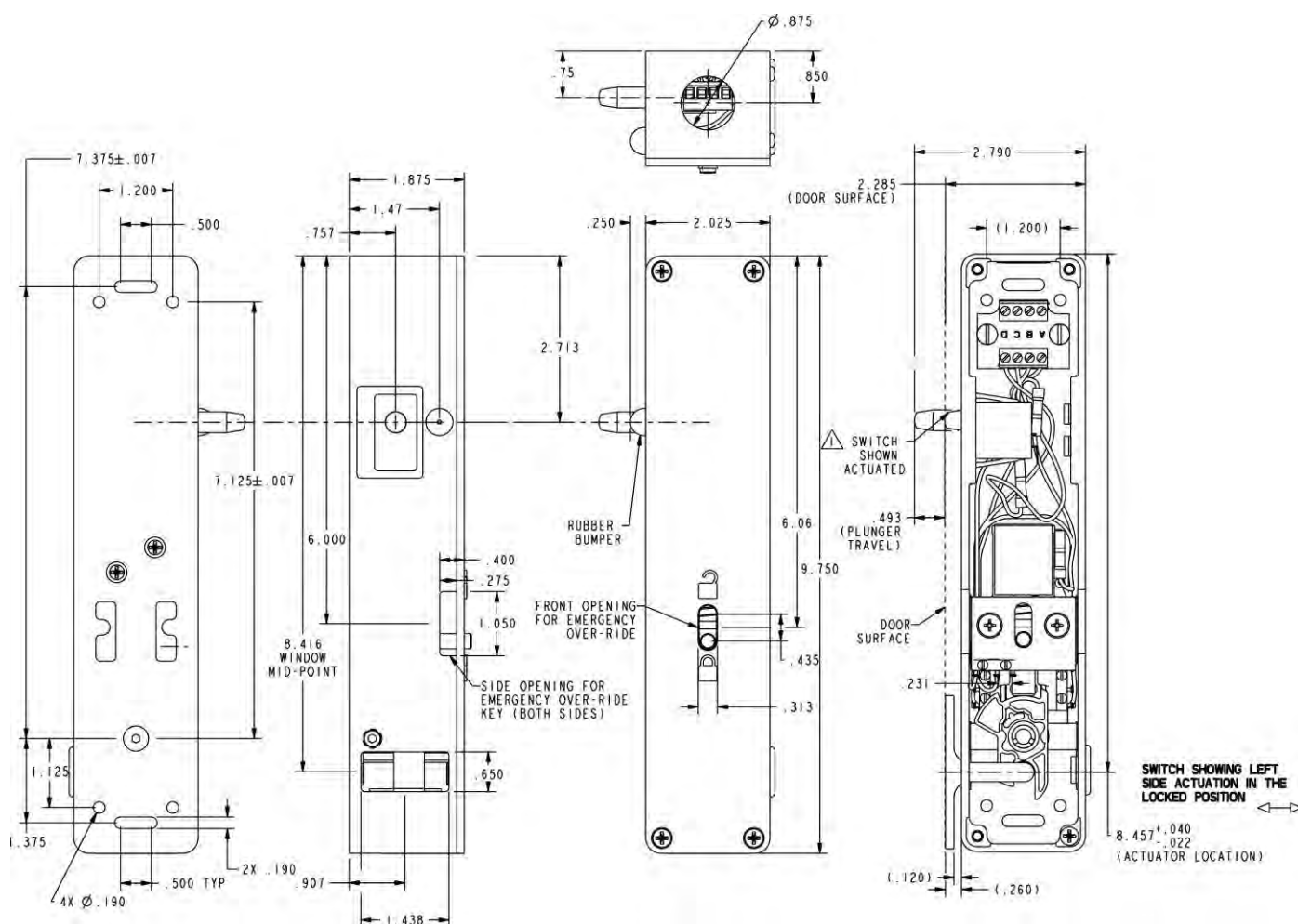


## PRODUCT LISTING

Catalog Listings	Description
RDI-G-R	Right-hand door interlock
RDI-G-L	Left-hand door interlock

# 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 property 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.

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# Honeywell

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.

#### 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]

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 set-up 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.

#### POTENTIAL APPLICATIONS

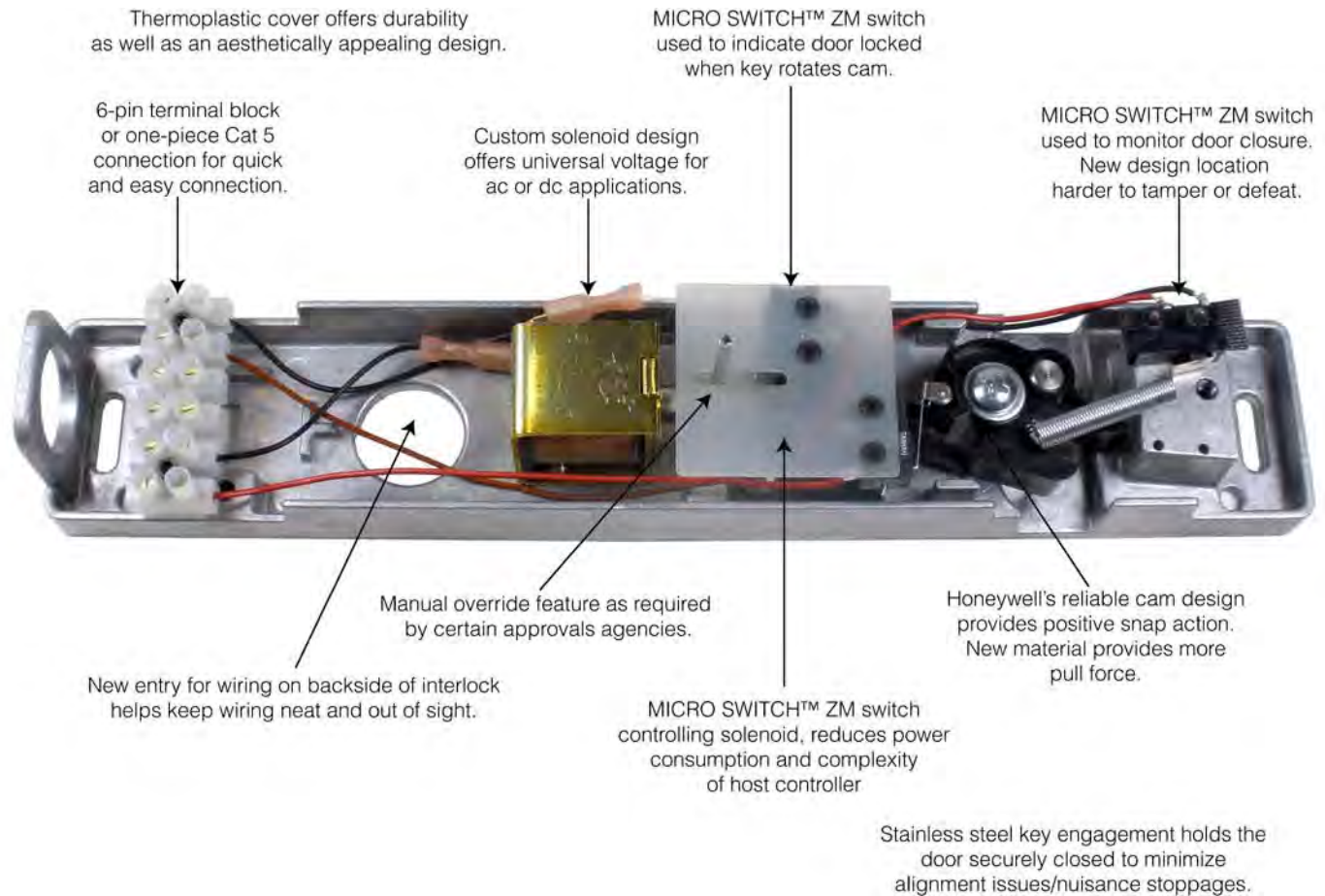
- Residential elevators
- Residential dumbwaiters
- Platform/vertical lifts

#### 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



## PRODUCT LISTING

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

## ACCESSORIES

Catalog Listing	Description
GKZ91	Relialign™ Series replacement key

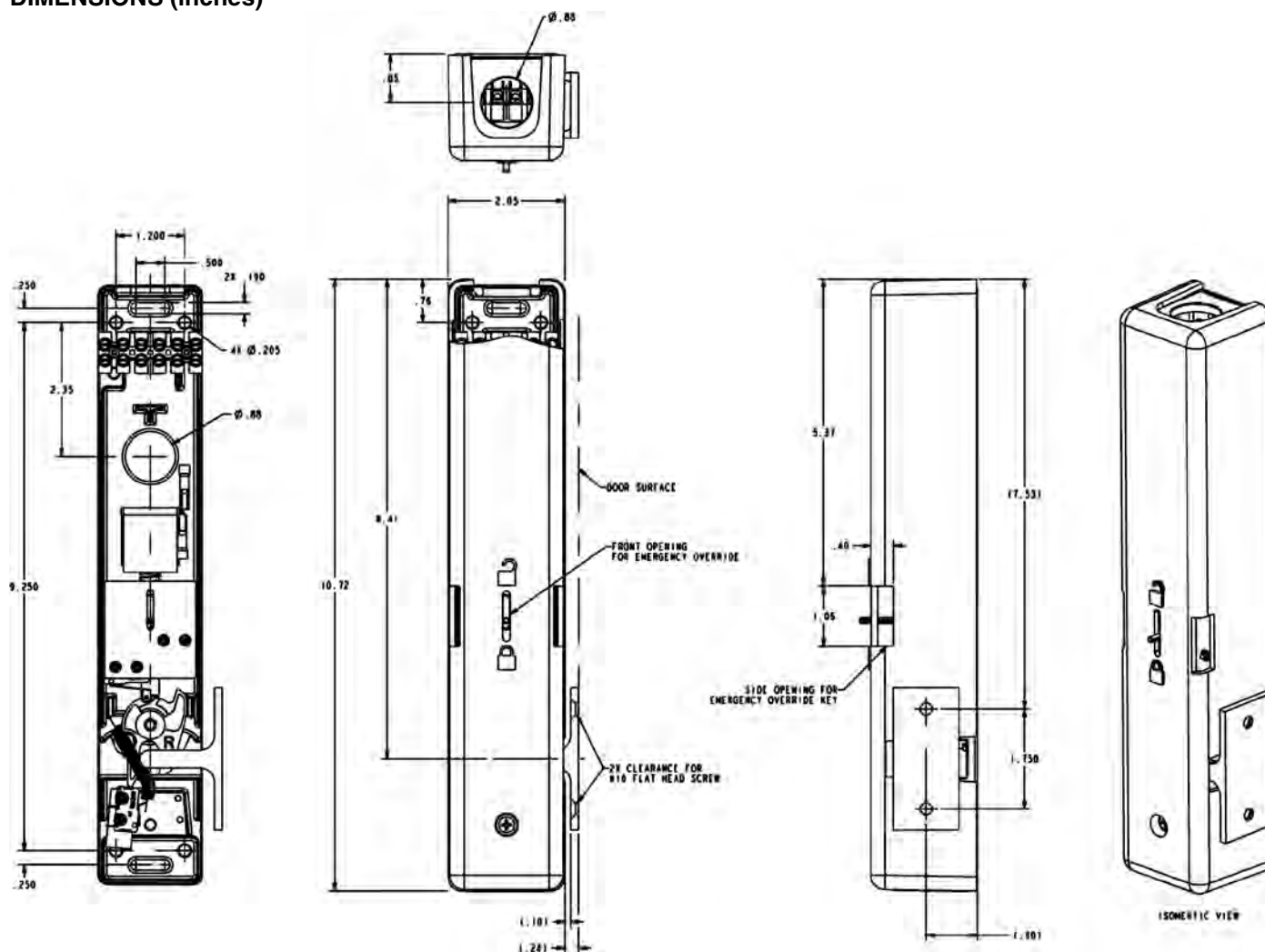
## Door Interlock Switches

## PRODUCT NOMENCLATURE

RDI2	R	B	S	2	—
Switch type	Key-entry Position	Solenoid Type	Wiring Type	Connector Type	Specials
<b>Relialign™</b> Series Residential Door Interlock	<b>R</b> Right <b>L</b> Left	<b>A</b> ac <b>D</b> dc <b>B</b> ac/dc	<b>P</b> Parallel <b>S</b> Series	<b>1</b> 6-pin terminal strip <b>2</b> Cat5 <b>3</b> Other	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.

\*Not all combinations are possible.

## DIMENSIONS (inches)



## **WARNING**

### **RISK TO LIFE OR PROPERTY**

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# Honeywell

001034-1-EN IL50 GLO Printed in USA  
June 2010  
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# 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**

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# 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



Dimensions in millimeters / inches, meters / feet, weights in kg / lbs

Specifications	Sensors and magnets	Amplifier
Power supply voltage	10-12 Vdc	100 to 128 Vac, 50/60 Hz
Power consumption	20 mA	3 VA max.
Output switching capacity	-	2 safety relays with guided-contacts (5A/120 Vac, 2 NO in series)
Material	Corrosion resistant plastic	Stainless steel
Dimensions	Sensors & magnets: 12.7x39.4x33/0.50x1.55x1.30	57.9x203.2x135.1/2.28x8x5.32
Operating temperature	-40 to 85°C / -40 to 185°F	-40 to 70°C / -40° to 158°F
Sealing	IP 67 / NEMA , 3, 4, 4X, 12, 13 and washdown	To be installed in an IP 54 enclosure
Status indicators	LED indicators on the amplifier	
Sensing distance	2.5 mm/0.09 in. (offset: 0 mm)	-
	1.3 mm/0.05 in. (offset: 3.8 mm/0.14 in.)	-
	0 mm (offset: 7.5 mm/0.29 in.)	-
Electrical connection	4-leads prewired (2, 4 or 15 m/6.56, 13.12 or 49.2 ft)	Terminal strip

## Ordering information <sup>(1)</sup>

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)

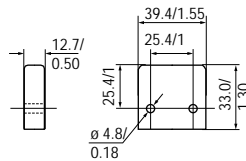
Magnet actuators:

52FY31

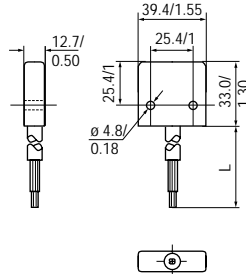
Safety amplifier:

FYQLA1-140R-3

## Magnet actuator (52FY31)

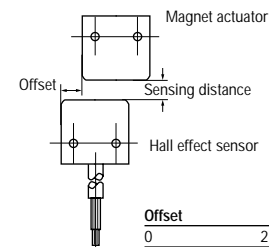


## Hall effect sensors (50FY41-□)



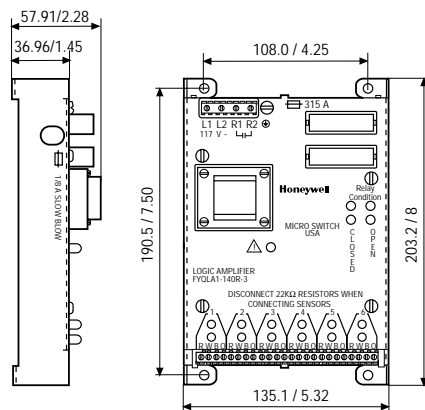
Listing	Cable length
50FY41-6	2 m/ 6.56 ft
50FY41-12	4 m/ 13.12 ft
50FY41-50	15 m/ 49.2 ft

## Offset/Sensing distance



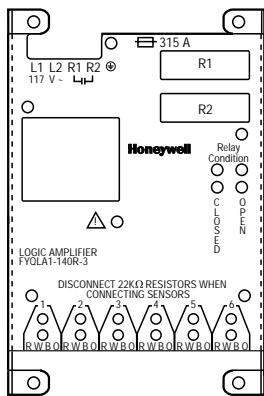
Offset	Sensing distance
0	2.5 mm/0.09 in.
3.8 mm/0.15 in.	1.3 mm/0.05 in.
7.5 mm/0.26 in.	0

## Safety amplifier

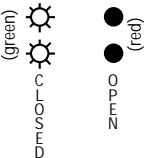
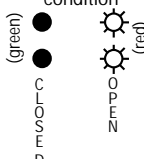


<sup>(1)</sup> Order one set of sensor and magnet per door, and up to 6 sets per amplifier.

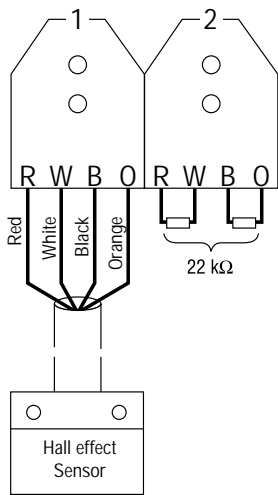
Status indicators



Logic amplifier output status

LED Status	Output Status	Machine operation
	ON	Enable
	OFF	Disable



Wiring instructions






R (+) = Red positive  
B (-) = Black negative  
W (NO output) = White  
O (NC output) = Orange

• If less than six 50FY41 sensors are being used, install 22 kΩ resistors between W and R and a second between O and B for each terminal set unwired. The resistors are necessary for correct operation of the amplifier. Ten 22 kΩ resistors are supplied.

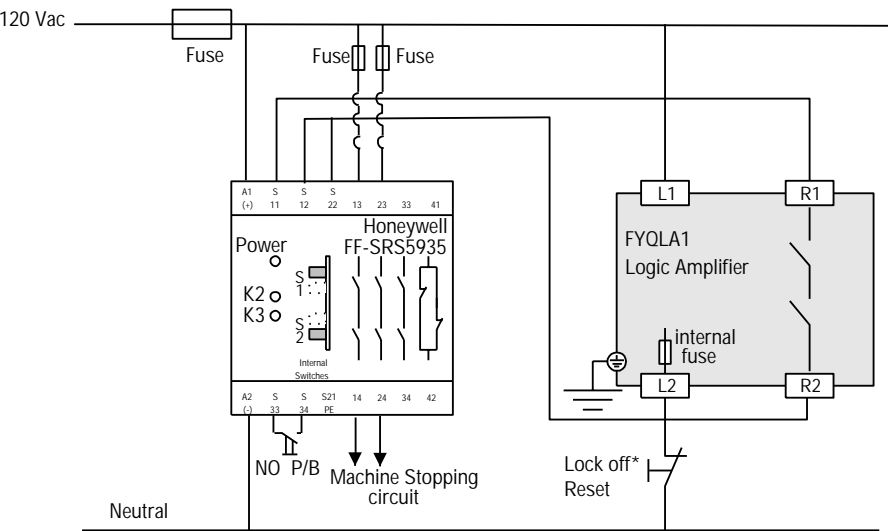
Failure detection

LED Status	System operation
	Normal operation
	Failure detection (or sensor misalignment detected)

Sensor output status (red LEDs number 1 to 6)

LED Status	Sensors operation
	- Normal operation - Each Hall effect sensor produces a signal - The door is closed - The machine operation is enabled
	- Normal operation - None of the Hall effect sensors produce a signal - The door is open - The machine operation is disabled
	- Improper operation - Only one out of two Hall effect sensors produces a signal - Either the door is not correctly closed or the sensor has a failure - The machine operation is disabled

● Light Off      ⚙ Light On      ⚙ Flickering light



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-SRS5935:  
S1: Without cross-fault monitoring  
S2: Manual restart

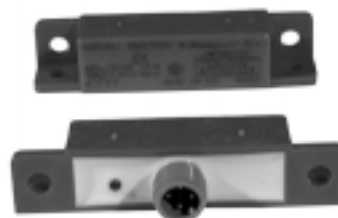
50FY

## 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.

### **⚠ WARNING**

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# Category 1 Hall Effect Door Interrupt Proximity Sensors

2-Wire AC, 3-Wire DC types



## Specifications

Sensor Type	3-wire DC		2-wire AC	
Sensing Distance	41FY1	41FY2	41FY1	41FY2
Min. Operate	6.35 mm (0.25 in.)	7.6 mm (0.30 in.)	7.6 mm (0.30 in.)	10.2 mm (0.40 in.)
Max. Release	15.24 mm (0.60 in.)	19.05 mm (0.75 in.)	19.05 mm (0.75 in.)	25.4 mm (1.0 in.)
Supply voltage	10 to 30 Vdc		93 to 132 Vac	
Load Current	0 to 200 mA		0 to 500 mA	
Leakage Current	30 $\mu$ A		1.5 mA max.	
Voltage Drop, max.	PNP: 2.5 V NPN: 1.5 V		6 V @ 500 mA	
Current Consumption, max.	40 mA		-	
Inrush Current, max.	-		1.2 A/20 msec	
Repeatability*	$\pm$ 3 %		$\pm$ 3 %	
Operating Temperature	-30 to +85 $^{\circ}$ C (-22 to +185 $^{\circ}$ F)		-25 to +70 $^{\circ}$ C (-13 to +158 $^{\circ}$ F)	
Protection Class	IP 67 (Dust tight, temporary immersion) NEMA** 4, 6, 6P, 13			
Materials	Housing: Polycarbonate; Cable: 22 gage PVC			
Circuit Protection	Transients (power and output), incorrect wiring			

\* 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.

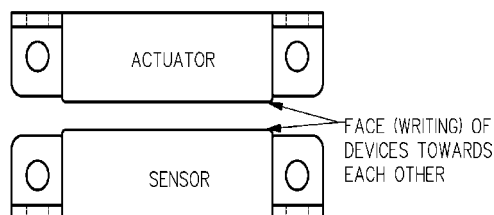
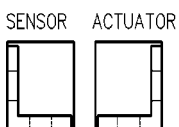
\*\* Application Note: Enclosures are based, in general, on the broad definitions outlined in NEMA standards. Therefore, it will be necessary for the user to determine that a particular enclosure is adequate when exposed to the specific condition that might exist in intended applications. Except as might otherwise be noted, all references to products relative to NEMA enclosure types are based on MICRO SWITCH evaluation only.

## ELECTROMAGNETIC COMPATIBILITY

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

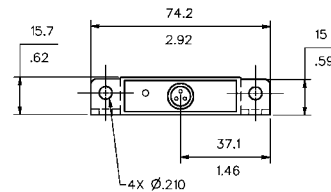
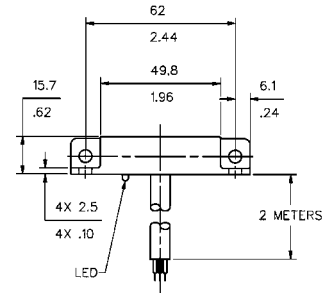
## MOUNTING REQUIREMENTS

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

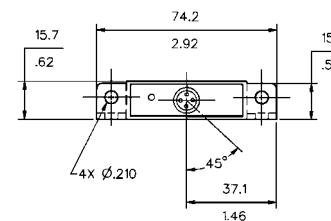
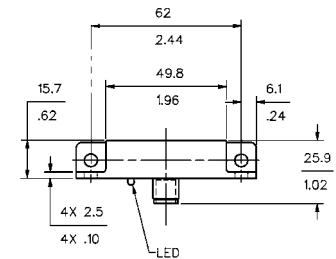


## MOUNTING DIMENSIONS (for reference only)

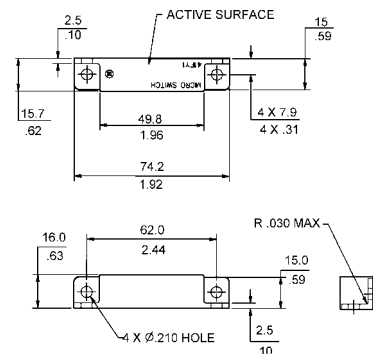
Sensor Pre-leaded Termination (mm/in)



Sensor Connector Termination (mm/in)

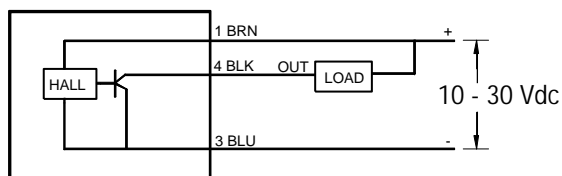


Magnetic Actuator (mm/in)

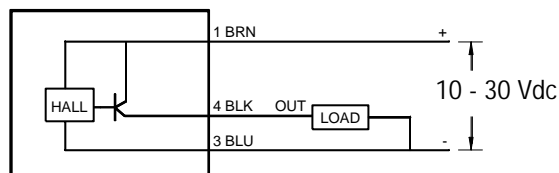


## LEADWIRES COLOR CODE AND CONNECTOR PINOUT

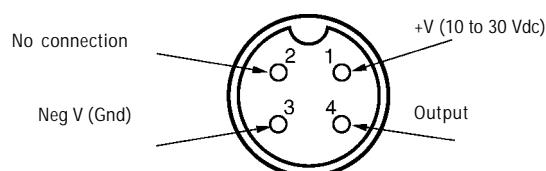
### 3-wire DC NPN (Sinking)



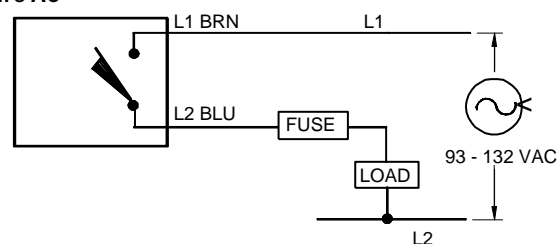
### 3-wire DC PNP (Sourcing)



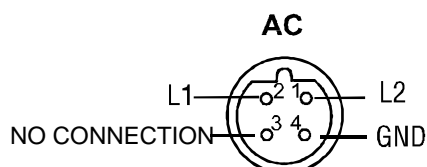
### 3-wire DC Pinout



### 2-wire AC

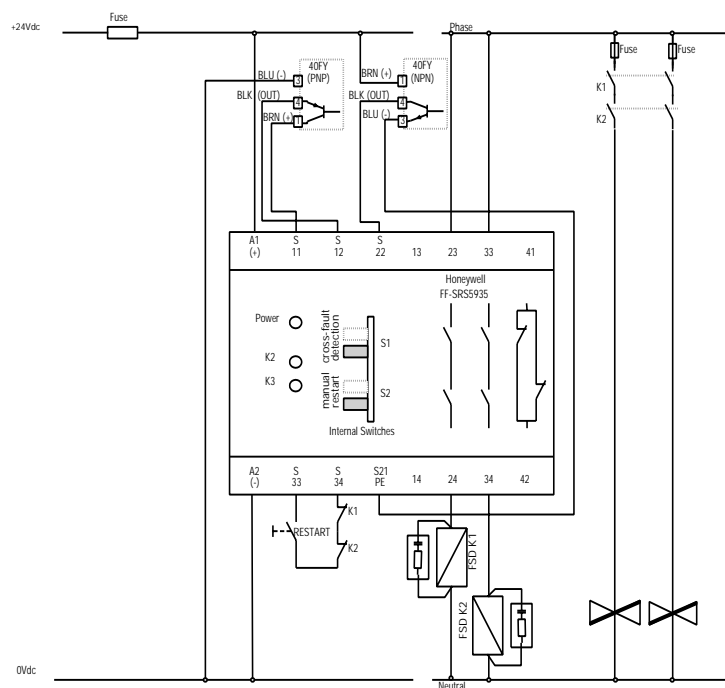


### 2-wire AC Pinout



### 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



































FSD: Final Switching Devices

### NOTICE:

The cable resistance between terminals S11-S12 and S21-S22 must be less than 68  $\Omega$  for correct operation of the emergency stop module

## Sensor order guide

Description		Catalog Listing
3-wire DC, PNP N.O. output, connector	  	40FY26-33
3-wire DC, PNP N.C. output, connector	  	40FY22-33
3-wire DC, PNP N.O. output, leadwires	 	40FY26-020
3-wire DC, PNP N.C. output, leadwires	  	40FY22-020
3-wire DC, NPN N.O. output, connector	  	40FY28-33
3-wire DC, NPN N.C. output, connector	  	40FY24-33
3-wire DC, NPN N.O. output, leadwires	  	40FY28-020
3-wire DC, NPN N.C. output, leadwires	  	40FY24-020
2-wire AC, N.O. output, connector		40FY36-33
2-wire AC, N.C. output, connector		40FY32-33
2-wire AC, N.O. output, leadwires		40FY36-020
2-wire AC, N.C. output, leadwires		40FY32-020
Magnet actuator	  	41FY1
Magnet actuator, extended range	 	41FY2

## Cables for connector versions

Style	Cable Length	Catalog Listings
<b>4-Pin DC Standard Key (12 mm/0.47 in. Micro)</b>		
Straight	2m (6.56 ft)	803000A09M020
	5m (16.4 ft)	803000A09M050
Right Angle	2m (6.56 ft)	803001A09M020
	5m (16.4 ft)	803001A09M050
Right Angle w/LED, NPN	2m (6.56 ft)	8030N1A09M020
	5m (16.4 ft)	8030N1A09M050
Right Angle w/LED, PNP	2m (6.56 ft)	8030P1A09M020
	5m (16.4 ft)	8030P1A09M050
<b>4-Pin AC Inverted Key (12 mm/0.47 in. Micro)</b>		
Straight	2m (6.56 ft)	B03000A11M020
	5m (16.4 ft)	B03000A11M050
Right angle	2m (6.56 ft)	B03001A11M020
	5m (16.4 ft)	B03001A11M050

## Emergency stop module order guide

FF-SRS5935 

Voltage:  
2: 24 Vdc  
E: 120 Vac  
G: 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.

#### 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

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.

#### POTENTIAL APPLICATIONS

---

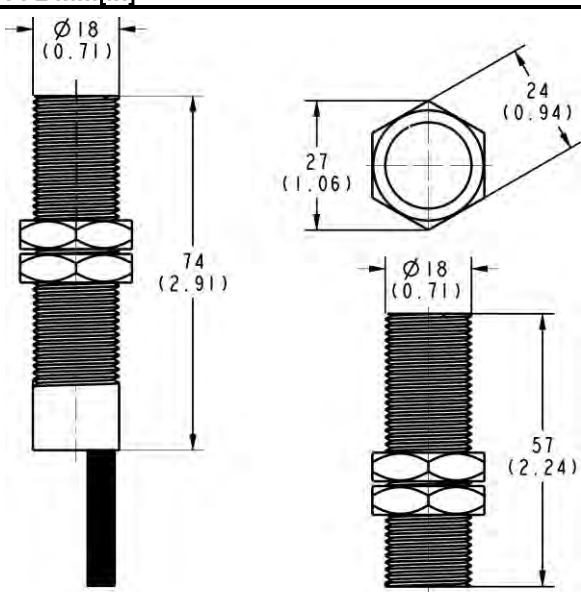
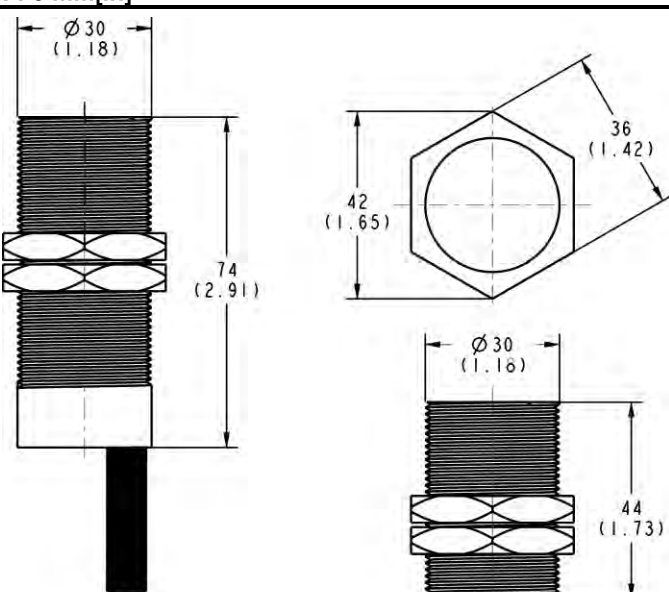
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicon equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery

# FF2 and FF3 Series

## TECHNICAL SPECIFICATIONS

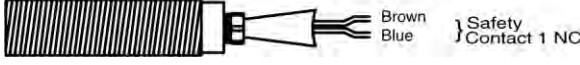
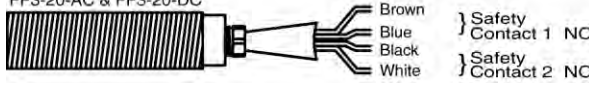
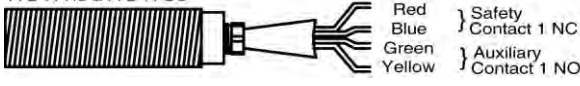
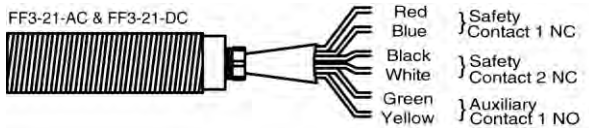
Type	FF2-10-AC FF2-11-AC	FF2-10-DC FF2-11-DC	FF3-20-AC FF3-21-AC	FF3-20-DC FF3-21-DC
Contact arrangement	1NC (FF2-10-AC) 1NC/1NO (FF2-11-AC)	1NC (FF2-10-DC) 1NC/1NO (FF2-11-DC)	2NC (FF3-20-AC) 2NC/1NO (FF3-21-AC)	2NC (FF3-20-DC) 2NC/1NO (FF3-21-DC)
Safety contact rating	230 Vac/2 A	30 Vdc/1 A inductive/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

## DIMENSIONS

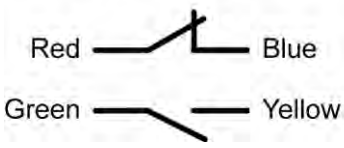

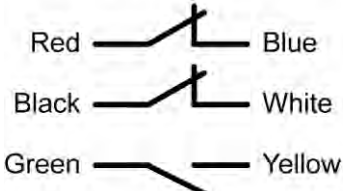
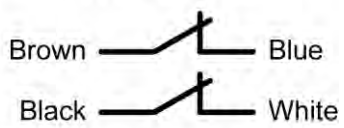
FF2 mm[in]		FF3 mm[in]	
			
SWITCH		SWITCH	
ACTUATOR		ACTUATOR	

# Magnetically Actuated Non-Contact Barrel Safety Switches

## CONNECTIONS

<b>FF2-10</b> FF2-10-AC & FF2-10-DC 	<b>FF3-20</b> FF3-20-AC & FF3-20-DC 
<b>FF2-11</b> FF2-11-AC & FF2-11-DC 	<b>FF3-21</b> FF3-21-AC & FF3-21-DC 

## CONTACTS

<b>FF2</b>  <div style="display: flex; justify-content: space-around;"> <div> <b>FF2-11-AC-03</b>  <b>FF2-11-DC-03</b>   </div> <div> <b>FF2-10-AC-03</b>  <b>FF2-10-DC-03</b>   </div> </div>	
<b>FF3</b>  <div style="display: flex; justify-content: space-around;"> <div> <b>FF3-21-AC-03</b>  <b>FF3-21-DC-03</b>   </div> <div> <b>FF3-20-AC-03</b>  <b>FF3-20-DC-03</b>   </div> </div>	

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

## ORDER GUIDE

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

### 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.**

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](http://www.honeywell.com/sensing)

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004748-2-EN IL50 GLO Printed in USA  
June 2009  
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# Honeywell

## 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

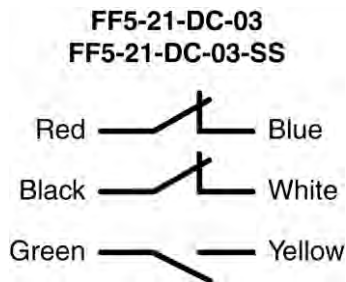
- Can forming and filling (aluminum, steel, and plastic)
- Pick and place packaging equipment
- Pick and place/assembly equipment
- Semicon equipment
- Plastic molding equipment
- Woodworking machinery
- Textile machinery
- Printing machinery

# FF5 Series

## TECHNICAL SPECIFICATIONS

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

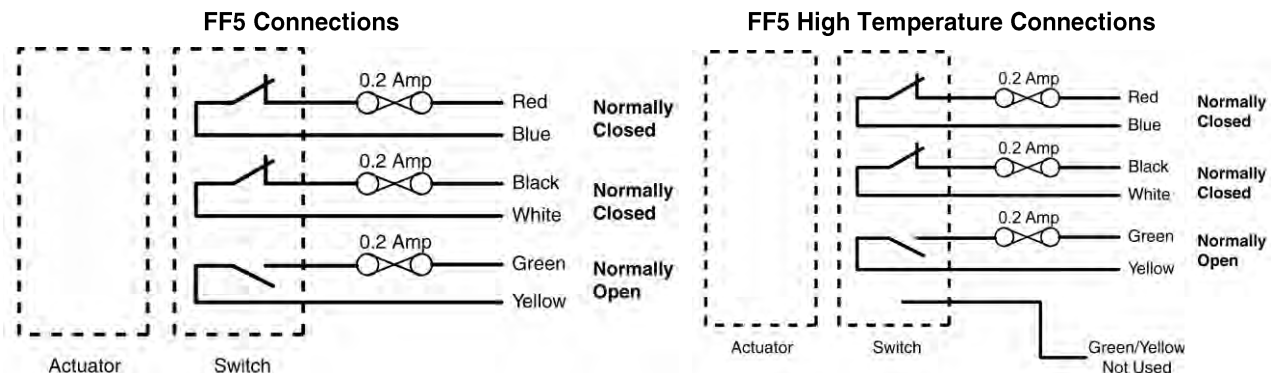
## FF5 CONTACTS



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

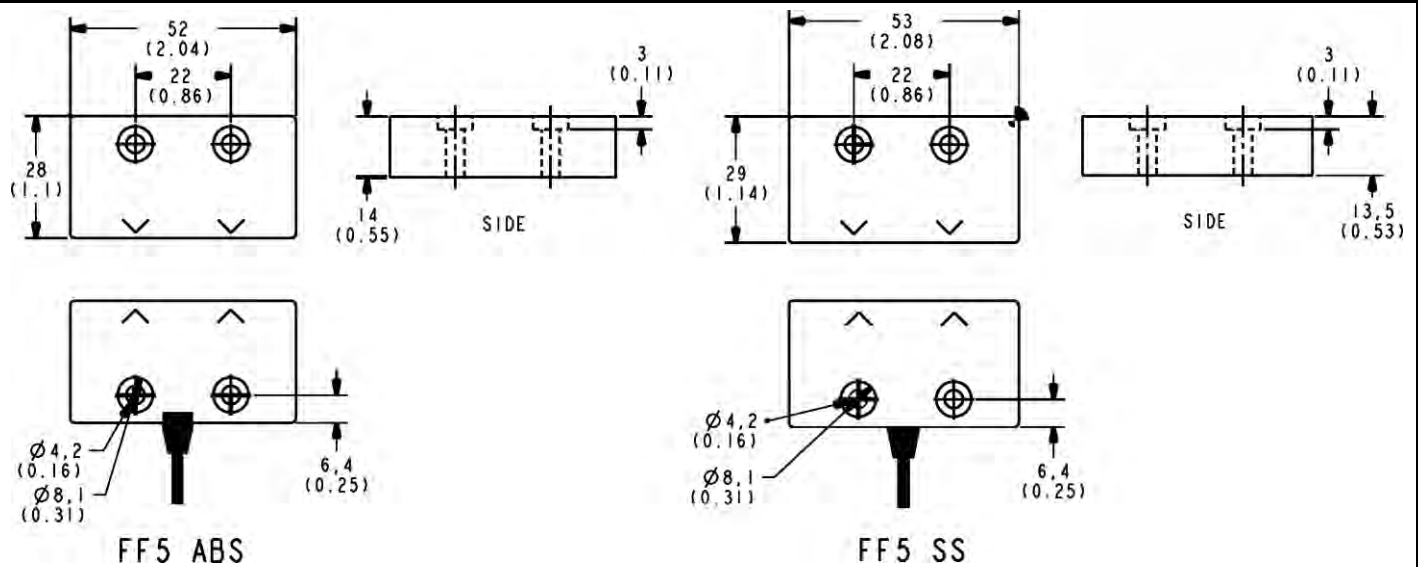
## FF5 CONNECTIONS

*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]



## ORDER GUIDE

Catalog Listing	Description
FF5-21-DC-03	Safety switch and actuator, red ABS, 2NC/1NO, dc, 3 m pre-wired
FF5-21-DC-03-SS	Safety switch and actuator, stainless steel, 2NC/1NO, dc, 3 m pre-wired
FF5-21-DC-10	Safety switch and actuator, red ABS, 2NC/1NO, dc, 10 m pre-wired
FF5-21-DC-10-SS	Safety switch and actuator, stainless steel, 2NC/1NO, dc, 10 m pre-wired

### 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

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# Honeywell

## 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

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- 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

# FF6 Series

## TECHNICAL SPECIFICATIONS

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

# Magnetically Actuated Non-Contact Safety Switches

## CONTACTS AND CONNECTIONS: PRE-WIRED SWITCHES

<b>FF6-21-ABS (ac &amp; dc)</b> <b>FF6-21-SS (dc only)</b>	<b>FF6-20 ABS (ac &amp; dc)</b> <b>FF6-20 SS (dc only)</b>	<b>FF6-11 ABS (ac &amp; dc)</b> <b>FF6-11 (dc only)</b>	<b>FF6-10 ABS (ac &amp; dc)</b> <b>FF6-10 SS (ac &amp; dc)</b>
<b>FF6-10-03-SS</b>			

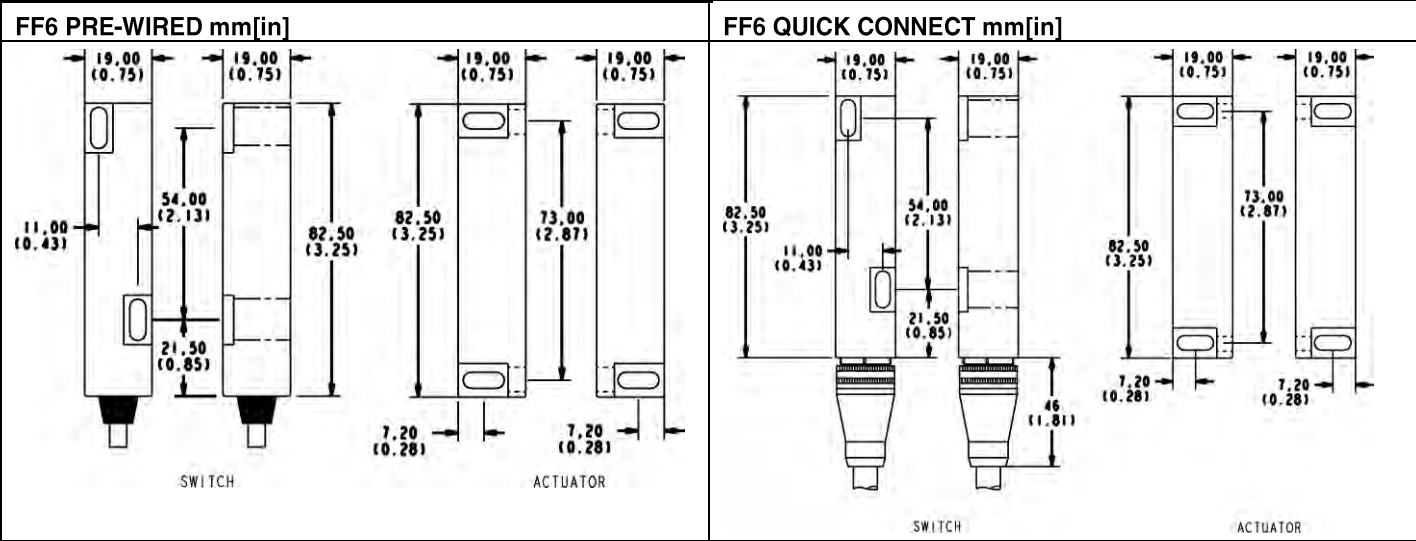
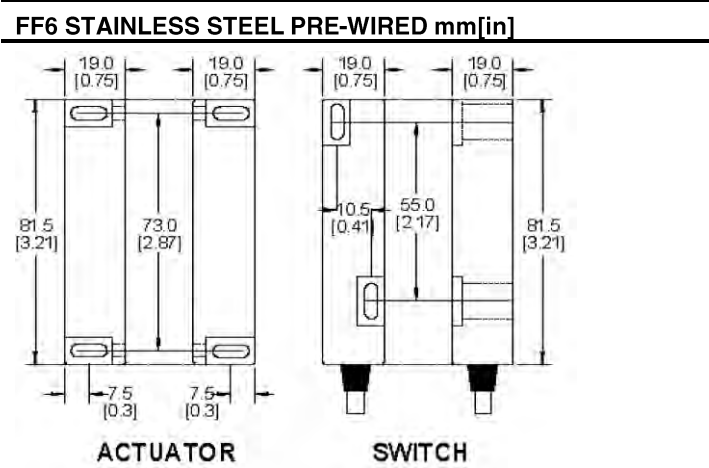
NOTE: Contact configurations show under closed condition for guard device.

## CONTACTS AND CONNECTIONS: QUICK DISCONNECT CONNECTIONS

<b>FF6-21-AC-QD05</b> <b>FF6-21-DC-QD05</b>	<b>FF6-20-AC-QD05</b> <b>FF6-20-DC-QD05</b>	<b>FF6-11-AC-QD05</b> <b>FF6-11-DC-QD05</b>	<b>FF6-10-AC-QD05</b> <b>FF6-10-DC-QD05</b>
<b>FF6-10-AC-QD05-SS</b>			

# FF6 Series

## DIMENSIONS



# Magnetically Actuated Non-Contact Safety Switches

## ORDER GUIDE

Catalog Listing	Description
FF6-10-DC-03-SS	Safety switch and actuator, stainless steel, 1NC safety, dc, 3 m pre-wired
FF6-11-DC-03-SS	Safety switch and actuator, stainless steel, 1NC safety and 1 NO auxiliary, dc, 3 m pre-wired
FF6-20-DC-03-SS	Safety switch and actuator, stainless steel, 2NC safety, dc, 3 m pre-wired
FF6-10-AC-03-SS	Safety switch and actuator, stainless steel, 1NC safety, ac, 3 m pre-wired
FF6-10-AC-QD-SS	Safety switch and actuator, stainless steel, 1NC safety, ac, M12 quick disconnect, no cable
FF6-10-AC-QD05-SS	Safety switch and actuator complete, stainless steel, 1NC safety, ac, M12 quick disconnect, 5 m cable
FF6-10-DC-03	Safety switch and actuator, red ABS, 1NC safety, dc, 3 m pre-wired
FF6-11-DC-03	Safety switch and actuator, red ABS, 1NC safety and 1NO auxiliary, dc, 3 m pre-wired
FF6-20-DC-03	Safety switch and actuator, red ABS, 2NC safety, dc, 3 m pre-wired
FF6-21-DC-03	Safety switch and actuator, red ABS, 2NC safety and 1NO auxiliary, dc, 3 m pre-wired
FF6-10-AC-03	Safety switch and actuator, red ABS, 1NC safety, ac, 3 m pre-wired
FF6-11-AC-03	Safety switch and actuator, red ABS, 1NC safety and 1NO auxiliary, ac, 3 m pre-wired
FF6-20-AC-03	Safety switch and actuator, red ABS, 2NC safety, ac, 3 m pre-wired
FF6-21-AC-03	Safety switch and actuator, red ABS, 2NC safety and 1NO auxiliary, ac, 3 m pre-wired
FF6-10-DC-QD05	Safety switch and actuator, red ABS, 1NC safety, dc, M12 quick disconnect, 5 m cable
FF6-11-DC-QD05	Safety switch and actuator, red ABS, 1NC safety and 1NO auxiliary, dc, M12 quick disconnect, 5 m cable
FF6-20-DC-QD05	Safety switch and actuator, red ABS, 2NC safety and 1NO auxiliary, dc, M12 quick disconnect, 5 m cable
FF6-21-DC-QD05	Safety switch and actuator, red ABS, 2NC safety and 1NO auxiliary, dc, M12 quick disconnect, 5 m cable
FF6-10-AC-QD05	Safety switch and actuator, red ABS, 1NC safety, ac, M12 quick disconnect, 5 m cable
FF6-11-AC-QD05	Safety switch and actuator, red ABS, 1NC safety and 1NO auxiliary, dc, M12 quick disconnect, 5 m cable
FF6-20-AC-QD05	Safety switch and actuator, red ABS, 2NC safety, ac, M12 quick disconnect, 5 m cable
FF6-21-AC-QD05	Safety switch and actuator, red ABS, 2NC safety and 1NO auxiliary, ac, M12 quick disconnect, 5 m cable

## **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.

## **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.**

### **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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004745-2-EN IL50 GLO Printed in USA  
June 2009  
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