Honeywell

# MICRO SWITCH™ Hazardous Area Switches Line Guide

**Hazardous environments demand Honeywell.** When conditions are hazardous and performance is critical, Honeywell Sensing and Control (S&C) delivers exceptional performance. Our hazardous location switches are limit switches designed specifically for dangerous indoor or outdoor locations — where reliability and repeatability are essential. To comply with explosion-proof requirements, the flame path within the switch housing is designed to contain and cool escaping hot gases — fumes that otherwise could cause an explosion outside the switch.

Honeywell S&C hazardous location switches are found in applications as diverse as grain elevators, offshore drilling, petrochemical and waste treatment plants, paint booths, hazardous waste-handling facilities, pipeline valves, and maintenance equipment.

## FEATURES

### HAZARDOUS AREA LIMIT SWITCHES

### EX Series.

**Features:** Smallest UL-listed housings available for use in hazardous locations • ATEX and IEC Ex certified • Up to 20 amp capacity • Ample wiring space • Mounts from four sides • Roller arms adjustable through 360 degrees • Non-sparking actuators • Captive cover screws • Grounding screw

**Benefits:** Flame paths within the housing cool exploding gases below the kindling temperature before they reach the explosive gases surrounding the housing. Potential applications include control valves and actuators, petrochemical plants, conveyors and material handling.

### BX/BX2 Series.

**Features:** UL, CSA, ATEX, and IEC Ex certified • Sealing - NEMA 1, 3, 4, 6, 7, 9, 13 • BX Series: aluminum housing • BX2 Series: stainless steel housing • Diverse conduit selection for wide range of potential applications • Tracking interchangeability with MICRO SWITCH™ LSX • Variety of heads and non-sparking actuators • 10 A continuous carry electrical rating • Choice of silver or gold contacts • Internal grounding screw

**Benefits:** BX/BX2 enclosure sealed for protection against corrosion, water, dust and oil as defined in NEMA 1, 3, 4, 6, 13 and IP67 as defined in IEC 60529. These enclosures are certified for II 2 GD; Ex d IIC T6; Ex d tD A21 T85°C. The entire series BX/BX2 complies with the ATEX Directive and is IECEx certified.

BX with conduit types 1/2 in - 14NPT, 3/4 in - 14NPT and all BX2 Series products also meet the North American Hazardous Locations Designation: Class I, Groups B, C and D; Class II, Groups E, F and G and comply with UL Standard: UL 894, CSA Standard: C22.2 No. 25-1966, C22.2 No. 30-M1986.

For outdoor use or in adverse environments where a combination of explosion proof plus sealing requirements are needed. To comply with explosion proof requirements, the BX/BX2 has flame paths within the housing, which cool exploding gases below the ignition temperature before they reach explosive gases surrounding the housing. Flame paths are (1) an extended plunger between the switch cavity and head and (2) the cover-housing threads on the front of the switch.

BX2 Series provides enhanced corrosion resistance in applications exposed to aggressive, caustic agents, as well as those found in chemical processing plants, off-shore/near-shore sites, and other hazardous areas. Potential applications include control valves and actuators, petrochemical plants, waste treatment, hazardous waste handling, paint booths, mining equipment, pulp and paper coating, grain elevators, and more.

### CLSX Series.

**Features:** Positive-opening operation of normally closed contacts • Available with up to 2NC positive-opening contacts • Cable length may be up to 200 ft in a straight line • Maintained version has broken/slacked cable detection • Tension indicator mark for easy adjustment • For use either indoors or outdoors • Sealing meets NEMA 1, 3, 4, 6, 7, 9, 13 • Internal grounding screw • UL/CSA approvals

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# MICRO SWITCH™ Hazardous Area Switches Line Guide

**A safe and sound investment.**
Best used for presence or absence detection where physical contact is permissible, Honeywell S&C hazardous location switches can be found in the most ingenious solutions and the most rugged machinery — in the most volatile environments. Designed for reliability, O-ring seals make the switch weatherproof, watertight and dust-tight, but are located outside flame paths so explosion-proof requirements are preserved.

Our corporate tradition of delivering quality and innovation is infused throughout Honeywell S&C products, ensuring you'll find our hazardous location switches loaded with the benefits your business demands:

- Exclusively manufactured for harsh environments
- Designed to be reliable, dependable, accurate
- Superior sealing and design integrity
- Comprehensive product line
- LSX/BX series are interchangeable with HDLS heavy-duty limit switches
- UL, CSA, ATEX, and IEC Ex certifications

| Hazardous Area Switches | EX Series |
|---|---|
| **Housing type** | EX |
| **EX approvals** | UL, CSA, ATEX (CE), IEC Ex |
| **Sealing** | NEMA 1, 7, 9 |
| **Designations** | Div. 1 & 2, Class I, Groups B, C, & D • Div. 1 & 2, Class II, Groups E, F, & G • II 2 G; EEx d IIB + H2 T6 |
| **Housing material** | aluminum |
| **Actuators/levers** | side rotary, top plunger, top roller plunger, manual |
| **Termination** | 0.5 in - 14NPT conduit, leadwires |
| **Circuitry** | 1NC 1NO SPDT snap action, 1NC 1NO SPDT maintained, 2NC 2NO DPDT snap action |
| **Operating temp.** | -40 °C to 71 °C [-40 °F to 160 °F] |
| **Amp rating** | 1 A, 10 A, 15 A, 20 A |

| Hazardous Area Switches | BX Series | BX2 Series | CLSX Series |
|---|---|---|---|
| **Housing type** | non plug-in | non plug-in | – |
| **EX approvals** | UL, CSA, ATEX, IEC Ex | UL, cUL, ATEX, IEC Ex | UL, CSA |
| **Sealing** | IP67; NEMA 1, 3, 4, 6, 13 | IP67; NEMA 1, 3, 4, 6, 7, 9, 13 | IP67; NEMA 1, 3, 4, 7, 9, 13 |
| **Designations** | Div. 1 & 2, Class I, Groups B, C, & D • Div. 1 & 2, Class II, Groups E, F, & G • II 2 G; Ex d IIC T6 • II 2 D; Ex d tD A21 T85°C | Div. 1 & 2, Class I, Groups B, C, & D • Div. 1 & 2, Class II, Groups E, F, & G • II 2 G; Ex d IIC T6 • II 2 D; Ex d tD A21 T85°C | Div. 1 & 2, Class I, Groups B, C, & D; Div 1 & 2, Class II, Groups E, F, & G |
| **Housing material** | aluminum | stainless steel | aluminum |
| **Actuators/levers** | side rotary, side plunger, side roller, top rotary, top plunger, top roller plunger, wobble | side rotary, top plunger | cable, maintained |
| **Termination** | 0.5 in - 14NPT conduit<br>0.75 in - 14NPT conduit<br>20 mm conduit | 0.5 in - 14NPT conduit<br>0.75 in - 14NPT conduit<br>20 mm conduit | 0.5 in NPT conduit<br>20 mm conduit |
| **Circuitry** | 1 NC 1NO SPDT DB snap action, 2NC 2NO DPDT DB snap action | 1 NC 1NO SPDT DB snap action, 2NC 2NO DPDT DB snap action | 1NC direct acting<br>1NO 1NO direct acting |
| **Operating temp.** | -40 °C to 70 °C<br>[-40 °F to 158 °F] | -40 °C to 70 °C<br>[-40 °F to 158 °F] | -1 °C to 70 °C<br>[-30 °F to 158 °F] |
| **Amp rating** | 10 A (thermal) | 10 A (thermal) | 10 A (thermal) |

** EX approvals pending as of July 2008.

## Hazardous Area Switches

| | GXE Series | 14CE100 Series |
|---|---|---|
| **Housing type** | – | – |
| **EX approvals** | ATEX (CE) | ATEX (CE) |
| **Sealing** | IP66/67 | IP65/66/67 |
| **Designations** | II 2 G; EEx d IIC T6<br>II 2 D; Ex tD A21 T85°C | II 2 G; Ex d IIC T6<br>II 2 D; Ex tD A21 T85°C |
| **Housing material** | zinc | zinc |
| **Actuators/levers** | side rotary, top plunger, top roller | top plunger, roller plunger, cross-roller |
| **Termination** | 5 m cable | cable (various lengths) |
| **Circuitry** | 1NC 1NO SPDT snap action | 1NC 1NO SPDT snap action |
| **Operating temperature** | -20 °C to 75 °C [-4 °F to 167 °F] | 0 °C to 70 °C [32 °F to 158 °F] |
| **Amp rating** | 5 A (thermal) | 1 A (thermal); 5 A (thermal) |

## Hazardous Area Switches

| | CX Series | GSX Series | LSX Series |
|---|---|---|---|
| **Housing type** | short: 104 mm [4.09 in];<br>standard 145 mm [5.71 in] | non plug-in | non plug-in |
| **Approvals** | UL, CSA, ATEX (CE), IEC Ex | cULus, ATEX, IEC Ex | UL, CSA |
| **Sealing** | IP66; NEMA 1, 3, 4, 4X, 6, 6P, 13 | IP67; NEMA 1, 4, 6, 7, 9, 12, 13 | IP67; NEMA 1, 3, 4, 6, 13 |
| **Designations** | *Div. 1&2, Class I, Groups B, C, & D • *Div 1&2, Class II, Groups E, F, & G • II 2 G; Ex d IIC T6 • II 2 D; Ex d tD A21 T85°C | Div. 1&2, Class I, Groups B, C, & D • Div 1&2, Class II, Groups E, F, & G • II 2 G; Ex d IIC T6 • II 2 D; Ex d tD A21 T85°C | Div. 1&2, Class I, Groups B, C, & D<br>Div 1&2, Class II, Groups E, F, & G |
| **Housing material** | aluminum, bronze | aluminum | aluminum |
| **Actuators/levers** | side rotary, plunger only | side rotary, pin plunger, top roller plunger, top roller lever | side rotary, side plunger, side roller, top rotary, top plunger, top roller plunger, wobble |
| **Termination** | 0.75 in - 14NPT conduit<br>25 mm conduit | 0.5 in - 14NPT conduit<br>20 mm conduit | 0.5 in - 14NPT conduit; 0.75 in - 14NPT conduit; 20 mm conduit |
| **Circuitry** | 1NC 1NO SPDT, 2NC 2NO DPDT,<br>4 mA to 20 mA<br>analog output: 4NC 4NO | SPDT, SPDT BBM, SPDT MBB, SPDT slow acting, DPDT, DPDT BBM, DPDT MBB, DPDT slow acting | 1 NC 1NO SPDT DB snap action,<br>2NC 2NO DPDT DB snap action |
| **Operating temperature** | -25 °C to 85 °C [-13 °F to 185 °F] | -40 °C to 70 °C [-40 °F to 158 °F] | -12 °C to 121 °C [10 °F to 250 °F] |
| **Amp rating** | 1 A, 10 A, 15 A, 20 A | 10 A (thermal) | 0.05 A, 10 A (thermal) |

* most CX listings carry these designations. However, some have special ratings.

**Benefits:** Designed to provide emergency stop protection for conveyor lines in hazardous environments. Designed to withstand 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. Potential applications include conveyor lines in hazardous atmospheres.

### GXE Series.

**Features:** II 2 G EExd IIC T6 • II 2 D Ex tD A21 T85°C • CE marked • EN50047 mounting compatible • Rugged zinc housing • Pre-wired - 5 m of cable • Bottom exit cable • Double insulated switch element • Snap action basic switch

**Benefits:** Fully potted and sealing protection of IP66/67 as per IEC 60529. Complies with the ATEX Directive. Potential applications include hazardous areas Category 2 (Zone 1) or Category 3 (Zone 2), petrochemical plants, material handling, and valves.

### 14CE100 Series.

**Features:** Compact construction • IP65/66/67 • Pre-wired or connector versions • Zinc housing • Wide selection of actuators • Gang mounting capability • Cable length variations • Side and bottom exit cable/connector • Simple two-screw mounting • Low temperature variants • Fluorocarbon sealing (standard)

**Benefits:** Pre-wired construction allows for ease of installation where space is at premium and external operating conditions can be difficult. Approved to meet the requirements of the Low Voltage Directive, ATEX Directive, and is CE marked. Potential applications include control valves and actuators, petrochemical plants, hazardous waste handling, material handling, power generating, and grain handling.

### CX Series.

**Features:** NEMA 1, 3, 4, 4X, 6, 6P, 13 • Watertight and dust-tight for outdoor use • Gold contacts, low-temp seals, and bronze housing options available • 4 mA to 20 mA analog output available • Rugged, cast aluminum housing • Pretravel, overtravel, and actuating sequence can be field adjusted without tools (all basics individually) • Rotary types convert in seconds to clockwise, counter-clockwise, or both-way operation

**Benefits:** Built especially for outdoor use in hazardous atmospheres. These enclosures are constructed to withstand the pressure of an internal explosion. Flame paths cool the exploded gases to a point less than the lowest safe operating temperature of the surrounding gas. Potential applications include control valves and actuators, petrochemical plants, grain handling, waste treatment, power generating, and paint facilities.

### GSX Series.

**Features:** Snap action contacts with positive break in an explosion-proof housing • Positive action push plunger breaks current upon opening of door or aperature • Explosion-proof housing for hazardous locations • Sealed for protection against corrosion, water, dust, and oil as defined in NEMA 1, 4, 6, 7, 9, 12, and 13 and IP67 • Complies with ATEX, IECEx, and cULus regulations • Simple installation • Extensive switch options and actuator styles

**Benefits:** To comply with explosion-proof requirements, the GSX has flame paths within the housing, which cool exploding gases below the ignition temperature before they reach explosive gases surrounding the housing. Flame paths are (1) an extended plunger between the switch cavity and head and (2) the cover-housing threads on the front of the switch. Potential applications include gates, doors, access panels, and/or cages on machinery in hydrocarbon refining, chemical processing, agricultural equipment, food processing, and grain elevators.

### LSX Series.

**Features:** UL, CSA approvals • Sealing - NEMA 1, 3, 4, 6, 13 • Diverse conduit selection for wide range of potential applications • Tracking interchangeability with MICRO SWITCH™ BX • Variety of heads and non-sparking actuators • 10 A continuous carry electrical rating • Choice of silver or gold contacts • Internal grounding screw

**Benefits:** LSX is sealed to NEMA 1, 3, 4, 6, 13 and carries UL/CSA approvals. The LSX meets North American Hazardous Location Designations: Class I, Groups B, C, and D; Class II, Groups E, F, and G.

For outdoor use or in adverse environments where a combination of explosion proof plus sealing requirements are needed. To comply with explosion proof requirements, the LSX has flame paths within the housing, which cool exploding gases below the ignition temperature before they reach explosive gases surrounding the housing. Flame paths are (1) an extended plunger between the switch cavity and head and (2) the cover-housing threads on the front of the switch. Potential applications include control valves and actuators, petrochemical plants, waste treatment, hazardous waste handling, paint booths, mining equipment, pulp and paper coating, grain elevators, and more.

**Warranty.** 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 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.

For more information about Sensing and Control products, visit www.honeywell.com/sensing or call +1-815-235-6847
Email inquiries to info.sc@honeywell.com

**⚠ 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.**

**⚠ WARNING**
**MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product 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.**

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# Notes