



SENSING AND CONTROL

Product Range Guide

For innovation that's well apart, there's only Honeywell Sensing and Control.

With more than 50,000 products ranging from snap-action, limit, toggle, and pressure switches to position, speed, pressure, and airflow sensors, Honeywell Sensing and Control (S&C) has one of the broadest sensing and switching portfolios available.

Honeywell sensor, switch, and control components are tailored to exact specifications for stronger performance, longer productivity, and increased safety. Enhanced accuracy and durability are built into every part, improving output and endurance. For our customers, this can reduce expenditures and operational costs. Our global footprint and channels help to competitively price such components for your chosen application and provide immediate technical support.

Our expertise in aerospace and defense, transportation, medical, and industrial industries means we offer products and solutions for a wide range of applications. But, an impressive product line is only one part. We possess unique engineering expertise and value-added capabilities.

While Honeywell's switch and sensor solutions are suitable for a wide array of basic and complex applications, our custom-



engineered solutions offer enhanced precision, repeatability, and ruggedness. We offer domain knowledge and technology resources, along with a close working relationship, to develop and deliver cost-effective, individually tailored solutions. Whether clean-slate development or simple modifications to an existing design are needed, our expertly engineered solutions help to meet the most stringent requirements with worldclass product designs, technology integration, and customer-specific manufacturing.

With a 75-year legacy in the switch and sensor business, Honeywell S&C has earned a reputation for reliability and excellence. Our strong product designs, Six Sigma Plus manufacturing environment, and robust testing facilities help provide quality out of the box, as well as enhanced, sustainable performance down the line.

Global service, sourcing, and manufacturing. Industry-leading engineers. Value-added assemblies and solutions. Construction to required specifications. A one-stop, full-service, globally competitive supplier... Honeywell Sensing and Control.

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MICRO SWITCH™ Limit Switches

Heavy-Duty Limit Switches



Offer a rugged, die-cast body with multiple mounting and actuator options. Low- and high-temp construction and factory-sealed, pre-wired versions available. Potential applications include food and beverage, construction and agriculture equipment, material handling, rail, industrial valves, chemical and food processing, shipboard, caustic waste handling, and power generation.



| Series | HDLS Standard | Stainless Steel | Fully Potted |
|-------------------------------------|--|---|--|
| Housing type | HDLS plug-in and non-plug-in | stainless steel non plug-in | HDLS non plug-in |
| Sealing | IP65/66/67; NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 | IP65/66/67; NEMA 1, 3, 3R, 4, 4X, 6, 6P, 12, 13 | IP65/66/67; NEMA 1, 3, 4, 6, 6P, 12, 13 |
| Temperature range | -12 °C to 93 °C [10 °F to 200 °F] | -12 °C to 121 °C [10 °F to 250 °F] | -12 °C to 121 °C [10 °F to 250 °F] |
| Housing material | zinc die-cast | stainless steel | zinc die-cast |
| Actuators/levers | top plunger, top roller, top rotary, side rotary, side plunger, side rotary, wobble | top plunger, top roller, top rotary, side rotary, side plunger, side rotary, wobble | top plunger, top roller, top rotary, side rotary, side plunger, side rotary, wobble |
| Termination | 0.5 in/0.75 in - 14NPT conduit; 20 mm conduit; PG13.5; 12 ft cable; 4, 5, and 9-pin mini- connector | 0.5 in/0.75 in - 14NPT conduit; 20 mm conduit; PG13.5; 12 ft cable; 4, 5, and 9-pin mini- connector | cable (various lengths); 4-pin; 5-pin; 9-pin; 20-pin mini-connector |
| Approvals | UL, CE, CSA, CCC, EN60947-1, EN60947-5-1 | UL, CE, CSA, CCC, EN60947-1, EN60947-5-1 | UL, CE, CSA, CCC, EN60947-1, EN60947-5-1 |
| Circuitry | 1NC 1NO SPDT, 1NC direct act- ing; 2NC 2NO DPDT, 2NC 2NO DPDT sequential | 1NC 1NO SPDT, 1NC direct acting; 2NC 2NO DPDT | 1NC 1NO SPDT; 2NC 2NO DPDT |
| Contacts | silver, gold | silver, gold | silver, gold |
| Amp rating | 10 A (thermal) | 10 A (thermal) | 10 A (thermal) |
| Measurements (H x W x D) | 106,7 mm x 29,4 mm x 44,4 mm [4.20 in x 1.16 in x 1.75 in] | 122,9 mm x 29,5 mm x 45,2 mm [4.84 in x 1.16 in x 1.78 in] | 106,7 mm x 29,4 mm x 44,4 mm [4.20 in x 1.16 in x 1.75 in] |
| Features | wide variety of actuators, cir- cuitry options, and connectivity | series 300 stainless steel housing suitable for corrosive environment and wash down food and beverage applications | construction eliminates fluid pen- etration into switch body; suitable for harsh-duty applications |

MICRO SWITCH™ Limit Switches

Global Limit Switches



Meet IEC standards for world-wide acceptance – often used in injection molding, PLC interface, machine tooling, escalators, packaging, food and beverage, industrial, lifts and elevators, electronic assembly, construction and agriculture equipment, material handling, and rail.



| Series | GLA | GLC |
|---------------------------------|---|--|
| Housing type | EN 50041 | EN 50047 |
| Sealing | IP67; NEMA 1, 3, 4, 12, 13 | IP66/IP67; NEMA 1, 4, 12, 13 |
| Temperature range | -25 °C to 85 °C [-13 °F to 185 °F] side rotary: -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] |
| Housing material | zinc die-cast | zinc die-cast |
| Actuators/levers | side rotary, top plunger, top roller, wobble | side rotary, top plunger, top roller, wobble |
| Termination | 0.5 in - 14NPT conduit, 20 mm, PG13.5 | 0.5 in - 14NPT conduit, 20 mm, PG13.5 |
| Approvals | UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508 | UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508 |
| Circuitry | SPDT snap action DB, SPDT slow action BBM/ MBB, DPDT snap action DB, 2NO and 2NC | SPDT snap action DB, SPDT slow action BBM/MBB |
| Contacts | silver, gold | silver, gold |
| Amp rating | 10 A (thermal) | 10 A (thermal) |
| Measurements (H x W x D) | 82,0 mm x 42,0 mm x 42,0 mm [3.23 in x 1.65 in x 1.65 in] | 55 mm x 30,5 mm x 30 mm [2.16 in x 1.20 in x 1.18 in] |
| Features | direct-acting NC contacts | direct-acting NC contacts |



| GLD | GLE | 91MCE | SZL-VL |
|--|---|--|--|
| EN 50047 | EN 50047 compatible | – | – |
| IP66/IP67; NEMA 1, 12, 13 | IP66; NEMA 1, 4, 12, 13 | IP67; NEMA 1, 4, 12, 13 | IP64 |
| -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] | -25 °C to 85 °C [-13 °F to 185 °F] | -20 °C to 60 °C [-4 °F to 140 °F] |
| plastic | zinc die-cast | zinc die-cast | zinc die-cast/plastic |
| side rotary, top plunger, top roller, wobble | side rotary, top plunger, top roller, wobble | side rotary, top/roller plunger, panel mount actuators | side rotary, top plunger, wobble, wobble cat whisker |
| 0.5 in - 14NPT conduit, 20 mm, PG13.5 | 0.5 in - 14NPT conduit, 20 mm, PG13.5 | 4-pin M12 connector, side exit cable, bottom exit cable | cable gland |
| UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508, UL746-C | UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508 | cULus, CE, CCC | UL, cULus, CE, CCC |
| SPDT snap action DB SPDT slow action BBM/MBB | SPDT snap action DB, SPDT slow action BBM/MBB, DPDT snap action DB, 2NO and 2NC | 1NO 1NC DO snap action, 1NC 1NO slow action: BBM | 1NC 1NO SPDT double break |
| silver, gold | silver, gold | silver | gold-plated silver |
| 10 A (thermal) | 10 A (thermal) | 10 A (thermal) | 5.0 A |
| 55 mm x 30,5 mm x 30 mm [2.16 in x 1.20 in x 1.18 in] | 50 mm x 65 mm x 30 mm [2.37 in x 2.56 in x 1.18 in] | 59,8 mm x 30 mm x 16 mm [2.35 in x 1.18 in x 0.63 in] | 64 mm x 28 mm x 38.1 mm [2.52 in x 1.102 in x 1.5 in] |
| direct-acting NC contacts | direct-acting NC contacts | direct-acting NC contacts; side and bottom exit connection options | integral cord grip; gold-plated silver contacts |

MICRO SWITCH™ Limit Switches

Medium-Duty and Specialty Limit Switches



Featuring a small metal package size. Potential applications include material handling, printing, machine tools, agricultural equipment, cranes, packaging, earth moving, conveyors, surtran, textile, and printing.



| Series | 14CE/914CE | LS |
|---------------------------------|--|---|
| Housing type | – | compact/non-plug-in, plug-in |
| Sealing | IP65, IP66; NEMA 1, 3, 4, 6, 6P, 12, 13 | NEMA 1, 3, 4, 6, 13 |
| Temperature range | 0 °C to 70 °C [35 °F to 160 °F] | -29 °C to 71 °C [-20 °F to 160 °F] |
| Housing material | zinc die-cast | zinc die-cast |
| Actuators/levers | side rotary, top plunger, roller, pushbutton, wobble | side rotary, roller arm |
| Termination | cable, micro-connector | 0.5 in - 14NPT conduit, mini-connector |
| Approvals | 14CE: CE, IEC947-5-1, EN60947-5-1 914CE: UL, CE, CSA, IEC947-5-1, EN60947-5-1 | UL, CSA |
| Circuitry | SPDT, SPSTNC, SPDTMBB, SPDTBBM | SPDT double break, DPDT double break |
| Contacts | silver, gold | silver, gold |
| Amp rating | 5 A (thermal) | 10 A |
| Measurements (H x W x D) | 49 mm x 40 mm x 16 mm [1.93 in x 1.58 in x 0.63 in] | 102,9 mm x 30,2 mm x 28,7 mm [4.05 in x 1.19 in x 1.13 in] |
| Features | rugged housing; miniature size; direct-acting contacts available; pre-leaded or various quick-connect terminations | mode of operation is field adjustable; variety of operating characteristics |



| Residential Door Interlock | Relialign™ RDI Series | Relialign™ RDI2 Series |
|---------------------------------|--|---|
| Description | door interlock for swing-style doors, elevators, and vertical lifts. available with metal or plastic housing | |
| Housing | metal | thermoplastic |
| Approvals | compliant to ASME A17.1 and UL 104 | |
| Voltage | 24 Vdc; 24 Vac | 24 Vdc; 24 Vac |
| Connection | terminal strip or cat 5 available | terminal strip or cat 5 available |
| Measurements (H x W x D) | 247,65 mm x 51,44 mm x 49,23 mm [9.75 in x 2.025 in x 1.938 in] | 273,05 mm x 51,44 mm x 49,23 mm [10.75 in x 2.025 in x 1.938 in] |
| Features | two separate mechanisms to indicate door closure; metal key; internal solenoid control; no open or exposed contacts; configurable product platform | |



BZE6/V6

split housing, side mount; split housing, flange mount

NEMA 1, 3, 4, 12
 E6/V6-RQ: IP40; NEMA 1
 E6/V6-RN: IP66; NEMA 1, 3, 4

-32 °C to 71 °C [-25 °F to 160 °F]

zinc die-cast

top plunger, maint. with reset plunger; lever actuated; wobble

0.5 in - 14NPT (or NPSM) conduit, mini-connector, cable

UL, CSA

SPDT, DPDT

silver

10 A or 15 A

63,5 mm x 25,4 mm x 77,2 mm]
 [2.50 in x 1.00 in x 3.04 in]

rugged electrostatic, epoxy-coated housing; booted versions sealed to IP66;
 unsealed actuators sealed to IP40; side or flange mount; low temperature options



SL1

–

IP67; NEMA 3, 4, 13

-10 °C to 70 °C [14 °F to 160 °F]

zinc die-cast

top plunger, roller arm

cable gland

UL, CSA

SPDT

silver, gold

5 A

59,8 mm x 44,2 mm x 18 mm
 [2.35 in x 1.74 in x 0.71 in]

often ideal source for replacement parts for machine tools; rugged housing;
 snap-in terminal enclosures; standard and low temperature ranges

MICRO SWITCH™ Hazardous Area Switches

Hazardous Area Switches



Designed to extinguish the flame path in a potentially explosive environment, MICRO SWITCH™ hazardous area switches are weatherproof, water-tight, and dust-tight. These highly reliable, rugged switches are often used in control valves, petrochemical, conveyors, grain elevators, and material handling.



| | |
|---------------------------------|---|
| Series | EX |
| Approvals | UL, CSA, ATEX (CE), IEC Ex |
| 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 |
| Sealing | NEMA 1, 7, 9 |
| Housing material | aluminum |
| Actuators/levers | side rotary, top plunger, top roller plunger, manual |
| Termination | 0.5 in - 14NPT conduit, lead wires |
| Circuitry | 1NC 1NO SPDT snap action; 1NC 1NO SPDT maintained; 2NC 2NO DPDT snap action |
| Operating temperature | -40 °C to 71 °C [-40 °F to 160 °F] |
| Amp rating | 1 A, 10 A, 15 A, 20 A |
| Measurements (H x W x D) | 65,0 mm x 70,6 mm x 51,3 mm [2.56 in x 2.78 in x 2.02 in] |
| Features | smallest housing used only in indoor applications; ample wiring space; mounts from any of four sides; used in temperature range of -40 °C to 71 °C [-40 °F to 160 °F] |



| GXE | 14CE100 | CX |
|---|---|---|
| ATEX (CE) | ATEX (CE) | UL, CSA, ATEX (CE), IEC Ex (consult factory for applicable listings) |
| II 2 G; EEx d IIC T6 II 2 D; Ex tD A21 T85°C | II 2 G; Ex d IIC T6 II 2 D; Ex 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 |
| IP66/67 | IP65, IP66, IP66/67 | IP66; NEMA 1, 3, 4, 4X, 6, 6P, 7, 9, 13 |
| zinc | zinc | aluminum, bronze |
| side rotary, top plunger, top roller | top plunger, roller plunger, cross-roller | side rotary, plunger only |
| 5 m cable | cable (various lengths) | 0.75 in - 14 NPT conduit, 25 mm conduit |
| 1NC 1NO SPDT snap action | 1NC 1NO SPDT snap action | 1NC 1NO SPDT; 2NC 2NO DPDT; 4 mA to 20 mA; analog output: 4NC 4NO |
| -20 °C to 75 °C [-4 °F to 167 °F] | 0 °C to 70 °C [32 °F to 158 °F] | -25 °C to 85 °C [-13 °F to 185 °F] |
| 5 A (thermal) | 1 A (thermal), 5 A (thermal) | 1 A, 10 A, 15 A, 20 A |
| 91,0 mm x 45 mm x 24,7 mm [3.58 in x 1.77 in x 0.97 in] | 49,0 mm x 40,0 mm x 16,0 mm [1.93 in x 1.57 in x 0.63 in] | short: 101,6 mm x 101,6 mm x 104 mm [4.00 in x 4.00 in x 4.09 in] standard: 101,6 mm x 101,6 mm x 145,0 mm [4.00 in x 4.00 in x 5.71 in] |
| EN 50047 mounting compatible; double-insulated switch element; snap-action basic switch | pre-wired or connector versions; gang-mounting capability; cable length variations; simple two screw mounting | rotary models convert in seconds; low temp seals; available models for on/off position switching or continuous analog output sensing; single or double pole, double-throw available |

MICRO SWITCH™ Hazardous Area Switches

Hazardous Area Switches



Designed to extinguish the flame path in a potentially explosive environment, MICRO SWITCH™ hazardous area switches are weatherproof, water-tight, and dust-tight. These highly reliable, rugged switches are often used in control valves, petrochemical, conveyors, grain elevators, and material handling.



| Series | LSX | BX |
|---------------------------------|--|--|
| Approvals | UL, CSA | BX (1/2 NPT or 3/4 NPT): UL, CSA, ATEX, IEC Ex BX (20 mm): ATEX, IEC Ex |
| Designations | Div. 1 & 2, Class I, Groups B, C, & D Div. 1 & 2, Class II, Groups E, F, & G | 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 |
| Sealing | IP67; NEMA 1, 3, 4, 6, 13 | BX: IP67; NEMA 1, 3, 4, 6, 13 BX (1/2-14 NPT, 3/4-NPT): IP67; NEMA 1, 3, 4, 6, 7, 9, 13 |
| Housing material | aluminum | aluminum |
| Actuators/ levers | side rotary, side plunger, side roller, top rotary, top plunger, top roller plunger, wobble | side rotary, side plunger, side roller, top rotary, top plunger, top roller plunger, wobble |
| Termination | 0.5 in - 14NPT conduit, 0.75 in - 14NPT conduit, 20 mm conduit | 1/2-14NPT conduit, 3/4-14NPT conduit, 20 mm conduit |
| Circuitry | 1NC 1NO SPDT DB snap action; 2NC 2NO DPDT DB snap action | 1NC 1NO SPDT DB snap action; 2NC 2NO DPDT DB snap action |
| Operating temperature | -12 °C to 121 °C [10 °F to 250 °F] | -40 °C to 70 °C [-40 °F to 158 °F] |
| Amp rating | 0.05 A, 10 A (thermal) | 0.05 A, 10 A (thermal) |
| Measurements (H x W x D) | 146,1 mm x 50,8 mm x 62,0 mm] [5.75 in x 2.00 in x 2.44 in] | 146,1 mm x 50,8 mm x 62,0 mm] [5.75 in x 2.00 in x 2.44 in] |
| Features | 10 A continuous carry electrical rating; variety of actuators and circuitry options; silver or gold contacts; field adjustable to meet various application needs | diverse conduit selection; compatible with LSX; tracking interchangeability with MICRO SWITCH™ ML-E1 and HDLS; variety of heads and non-sparking actuators; 10 A continuous carry electrical current; silver or gold contacts; ATEX-required internal mounting screw |



| BX2 | GSX | CLSX |
|--|---|--|
| BX2 (1/2 NPT, 3/4 NPT, 20 mm): UL, cUL, ATEX and IEC Ex | cULus, ATEX, IEC Ex | UL, CSA |
| 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 |
| IP67; NEMA 1, 3, 4, 6, 7, 9, 13 | IP67; NEMA 1, 4, 6, 7, 9, 12, 13 | NEMA 1, 3, 4, 7, 9, 13 |
| stainless steel | aluminum | aluminum |
| side rotary, top plunger, top roller plunger | side rotary, pin plunger, top roller plunger, top roller lever | cable, maintained |
| 1/2-14NPT conduit, 3/4-14NPT conduit, 20 mm conduit | 0.5 in - 14NPT conduit, 20 mm conduit | 0.5 in - 14NPT conduit, 20 mm conduit |
| 1NC 1NO SPDT DB snap action; 2NC 2NO DPDT DB snap action | SPDT; SPDT BBM; SPDT MBB; SPDT slow acting; DPDT; DPDT BBM; DPDT MBB; DPDT slow acting | 1NC direct acting; 1NO 1NO direct acting |
| -40 °C to 70 °C [-40 °F to 158 °F] | -40 °C to 70 °C [-40 °F to 158 °F] | -1 °C to 70 °C [-30 °F to 158 °F] |
| 0.05 A, 10 A (thermal) | 10 A (thermal) | 10 A (thermal) |
| 146,1 mm x 50,8 mm x 62,0 mm] [5.75 in x 2.00 in x 2.44 in] | 154,2 mm x 44,5 mm x 72 mm [6.07 in x 1.75 in x 2.84 in] | 128,7 mm x 50,8 mm x 73,2 mm [5.07 in x 2.00 in x 2.88 in] |
| corrosion-resistant stainless steel housing; diverse conduit selection; tracking interchangeability with MICRO SWITCH™ LSX and BX series products; variety of heads and non-sparking actuators; 10 A continuous carry electrical current; silver or gold contacts; ATEX-required internal mounting screw | snap-action contacts with positive break; simple installation; positive action push plunger | positive-opening operating of NC contacts; cable length may be 200 ft in straight line; internal grounding screw |

Limitless™ Components

Wireless Limit Switches and Monitors



New alternative enables designers to work without limitations of traditional tethered devices. Enables presence, absence, or position in applications where wired products are not feasible due to functionality and/or cost. Potential applications include door position, construction/ag machines, conveyors, cranes, grain diverters, lifts, material handling, presses, and valves.



| Series | WGLA | WLS | WPMM |
|---|--|--|---|
| Housing type | EN 50041 | EN50041 and back-mounting | snap-in panel or screw mount design |
| Housing material | powder-coated, zinc die-cast | powder-coated phosphate epoxy finish, zinc die-cast | LCP, VECTRA E130i |
| Radio | WPAN 802.15.4; 2.4 GHz | WPAN 802.15.4; 2.4 GHz | – |
| Signal range | 1000 ft [305 m] in US/Canada | 1000 ft [305 m] in US/Canada | 1000 ft [304 m] in US/Canada |
| Sealing | IP67; NEMA 1, 4, 12, 13 | IP67; NEMA 1, 3, 4, 6, 6P, 12, 13 | IP67 |
| Actuators/operating heads | side rotary, top plunger, top roller, top roller lever | over 15 side rotary actuators; pin/roller plunger, side/top rotary (with more than 15 levers), cat whisker, wobble stick, side shaft eyelet pull, maintained/momentary side plunger, and cable pull operating heads | – |
| Antenna types | direct or remote mounts, omni-directional | direct or remote mounts, omni-directional | direct or remote mounts, omni-directional |
| Supply voltage | – | – | 10 Vdc to 30 Vdc |
| Supply current | – | – | 750 mA |
| Measurements (H x W x D) (without antenna) | 102,85 mm x 42 mm x 62,1 mm [4.05 in x 1.65 in x 2.44 in] | 106,68 mm x 41,15 mm x 62,61 mm [4.20 in x 1.62 in x 2.47 in] | 31,75 mm x 53,84 mm x 74,30 mm [1.250 in x 2.120 in x 2.925 in] |
| Features | reliable, flexible, and secure wireless transmission; EN 50041 die-cast metal enclosure; WPAN 802.15.4 2.4 GHz point-to-point; FCC 15, IC, ACMA, & ETSI; EMI immunity; full complement of operating heads and levers; direct or remote mount antenna options | operating head rotary tested in excess of 50 million cycles; diaphragm seal between head and body cavity; twin shaft seals protect head and internal components from corrosion and debris; reliable, flexible, and secure wireless transmission; EN 50041 die-cast metal enclosure; WPAN 802.15.4 2.4 GHz point-to-point; FCC 15, IC, ACMA, & ETSI; EMI immunity; direct or remote mount antenna options | reliable, flexible, and secure wireless transmission; can potentially monitor up to 16 Limitless™ switches; field pairing function allows for rapid configuration (adding or subtracting switches); WPAN 802.15.4 2.4 GHz point-to-point; FCC 15, IC, ACMA, & ETSI; EMI immunity; full complement of operating heads and levers; direct or remote mount antenna options |

OneWireless™ XYR6000 Components

Wireless Position Sensors



Allows remote, reliable monitoring in a variety of applications to avoid the time and safety risk of manually monitoring in hazardous areas and remote installations. Wireless technology eliminates the need for communications cabling or power line installation, saving both time and money. Potential applications include positioners, manual process valves, eye bath stations, emergency showers, tank level, steam traps, louvers, relief valve doors, dampers, mining conveyor applications, and grain diverters.



| | |
|---------------------------------|---|
| Series | XYR6000 |
| Housing | A 380 die-cast aluminum alloy |
| Radio | FCC Par 15.247 subpart s "B" & "C" |
| Signal range | 1000 ft [304 m] |
| Sealing | IP66/67; NEMA 1, 3, 4, 6, 6P, 13 |
| Hazardous ratings | U.S. and Canadian (cCSAus) for Division 1, Class I - Groups A, B, C, & D; Class II - Groups E, F, & G; Class III ATEX/IEC Ex - Ex d [ia] IIC T6 Gb; Ex tb IIIC T85C IP66/67 Db |
| Accuracy | ±5 % over 250° when centered between a slip clutch |
| Operating temperature | -40 °C to 70 °C [-40 °F to 158 °F] |
| Measurements (H x W x D) | 101,6 mm x 101,6 mm x 142,75 mm [4.00 in x 4.00 in x 5.62 in] |
| Features | enhances safety by reducing the need for human site monitoring in areas that pose a safety risk; reduces the potential for environmental incidence through the explosion-proof packaging of the sensor mechanism; improves efficiency of scheduled maintenance by targeting valves that have degraded; communicates with Honeywell's OneWireless™ (ISA100) network and WiFi devices simultaneously; full UL, ATEX, and IEC Ex approvals; universal mounting |

Machine Safety

MICRO SWITCH™ Safety Switches

From factory floor to assembly line, from packaging machinery to robot cells, Honeywell delivers reliability and safety in compact, cost-effective safety switches. Enhanced performance, extended productivity, and full-line flexibility. Most models are SIL 3 capable.



| Series | FF and FFS | GKM |
|---|---|---|
| Attributes | non-contact safety switches either magnetically operated or by electronically coded magnets providing high degree of tamper-proof, reliable operation | most compact key-operated safety product available; fully sealed construction |
| Potential applications | small doors and apertures | small doors and apertures |
| Housing | ABS resin-filled, stainless steel | glass-filled polyester |
| Approvals | UL, CE | UL, CSA, CE, S-mark, SIL 3 capable |
| Sealing | IP67, NEMA 4 | IP67; NEMA 1, 12, 13 |
| Differentiator | large actuation window from almost any angle (ranges -6 mm to 20 mm); sealed, compact and rugged design | can be used for doors as small as 160 mm [6.3 in] with small closed radius; available cabled or with integrated M12 connectors for plug-and-play install |
| Measurements (less levers) H x W x D | 82,5 mm x 19 mm x 17 mm [3.25 in x 0.75 in x 0.67 in] | 69,4 mm x 34,0 mm x 16,0 mm [2.73 in x 1.34 in x 0.63 in] |
| Temperature | -10 °C to 55 °C [14 °F to 131 °F] | 25 °C to 85 °C [-13 °F to 185 °F] |
| Features | DIN rail mounting; guard status indication; small, easy to mount; either pre-wired or connector fitted | double insulated, no ground wiring required; wiring entrance options from bottom, side, or both (dual entry GKME for daisy chain capability); variety of keys available for top or front entry options. |



| Series | 24CE/924CE | GK |
|---|---|---|
| Attributes | miniature, compact die-cast zinc housing construction with a wide variety of actuators | heavy duty metal body keyed interlock switch designed for large doors and cages |
| Potential applications | small doors and apertures | large, heavy door cage and gate applications |
| Housing | zinc | zinc |
| Approvals | 24CE: CE; 924CE: UL, CE, SIL 3 capable | UL, CSA, CE, S-mark, SIL 3 capable |
| Sealing | IP66 | IP67; NEMA 1, 4, 12, 13 |
| Differentiator | tough and rugged switch, designed to operate in harsh operating environments | unique friction feature for key retention; rugged design withstands vibration, harsh environments, and provides long-term durability (tested 15 million cycles) |
| Measurements (less levers) H x W x D | 49,0 mm x 40,0 mm x 16,0 mm [1.93 in x 1.57 in x 0.63 in] | 121,6 mm x 42 mm x 42,6 mm [1.79 in x 1.652 in x 1.68 in] |
| Temperature | 0 °C to 70 °C [32 °F to 160 °F] | -25 °C to 85 °C [-13 °F to 185 °F] |
| Features | flexible attachment with simple two screw mounting; available pre-wired with choice of cable lengths or connector fitted; side and bottom cable entry | multiple key (8 top or side entry) and lockout device options available; LED indicator; up to four contacts |



GKN

common footprint safety switch for multiple applicability; multiple contacts, multiple key and wiring entry points

small/medium doors and apertures

glass-filled polyester

cULus, CE, CCC, S-mark, SIL 3 capable

IP67; NEMA 1, 4, 12, 13

one switch stocking for multiple contact, key entry, and wiring application combinations; large wiring cavity

90,0 mm x 40,0 mm x 33,0 mm
[3.55 in x 1.57 in x 1.30 in]

-25 °C to 70 °C [-13 °F to 158 °F]

multi-use, multi-option; up to 3 contacts for additional monitoring; 4 key head entries; knock-out points for wiring entry; double insulated body; rigid and flexible key options available



GKE

compact housing size, standard IEC 20 mm mounting

small doors and apertures

glass-filled polyester

cULus, CE, S-mark, SIL 3 capable

IP66; NEMA 1, 12, 13

small MIN-DIN footprint; simple wiring and mounting; double insulated

92,2 mm x 24,2 mm x 29,4 mm
[3.63 in x 0.95 in x 1.16 in]

-25 °C to 85 °C [-13 °F to 185 °F]

medium duty switch covers most common 1NC/1NO and 2NC applications key entry from top and front



GKS

solenoid trapped key interlock switch designed not to release until hazard has been removed

medium to large door applications

glass-filled polyester

cULus, CE, CCC, S-mark, SIL 3 capable

IP67; NEMA 1, 4, 12, 13

simple-to-mount, slim-mount glass filled polyester body; available with key entry (four available square positions); up to four contacts

196,8 mm x 40 mm x 41 mm
[7.75 in x 1.57 in x 1.61 in]

-25 °C to 50 °C [-13 °F to 122 °F]

power-to-lock or power-to-unlock for key trap; override mechanism on cover; three knock out conduit openings for wiring flexibility (sides + bottom); optional LED indicator.



GSX

heavy-duty metal body, explosion-proof safety switch designed for hazardous area applications

gates, doors, access panels, cages

aluminum

cULus, ATEX, IEC Ex

IP67; NEMA 1, 4, 6, 7, 9, 12, 13

explosion-proof and positive-break safety switch with cULus, ATEX, IEC Ex approvals

154,2 mm x 44,5 mm x 72 mm
[6.07 in x 1.75 in x 2.84 in]

-40 °C to 70 °C [-40 °F to 158 °F]

extensive switching and actuating options; designed so even welded contacts will open and machine will stop in emergency with positive opening NC snap action contacts (direct mechanical linkage)



GKR/L

heavy-duty metal body solenoid trapped key interlock switch designed not to release until hazard has been removed; for large doors/cages

large, heavy door, cage and gate machine apps

zinc

UL, CSA, CE, S-mark, SIL 3 capable

IP68; NEMA 1, 4, 6P, 12, 13

rugged design withstands vibration, harsh environments; provides long-term durability (tested 15 million cycles)

149,0 mm x 110,0 mm x 48,8 mm
[5.85 in x 4.33 in x 1.92 in]

-25 °C to 85 °C [-13 °F to 185 °F]

solenoid power-to-lock or power-to-unlock; key retain force 1000 N max; multiple key and lockout devices; dual LED indicator; available with key entry (4 face orientations); up to 4 contacts; manual override



GSS

rugged metal housing handles multiple broad applications

medium/large doors and apertures

glass-filled polyester, zinc

UL, CSA, CE, SIL 3 capable

IP67; NEMA 1, 4, 12, 13

highly visible red housing; snap action and slow action basic switches

83,0 mm x 30,5 mm x 30,0 mm
[3.27 in x 1.20 in x 1.18 in]

-25 °C to 85 °C [-13 °F to 185 °F]

multiple contact options (up to 4 MBB); full range of actuator heads and levers; reliable low energy switching; tested to 15 million operations



GSS Hinge

metal or plastic housing for access door safety hinge applications

medium/large doors

glass-filled polyester, zinc

UL, CSA, CE, SIL 3 capable

IP67; NEMA 1, 4, 12, 13

highly visible red housing; actuator head may be rotated in 90° increments

83,0 mm x 30,5 mm x 30,0 mm
[3.27 in x 1.20 in x 1.18 in]

-25 °C to 85 °C [-13 °F to 185 °F]

low profile design; available with 3 actuator styles (left, center, right); multiple contact options; reliable low energy switching



CPS/2CPS

single/dual head cable pull designed to provide emergency stop protection; often used for exposed conveyor and assembly lines

conveyor applications

zinc

UL, CSA, CE, SIL 3 capable

IP67; NEMA 1, 4, 12, 13

rugged, sealed, large wiring cavity; indicators; wide temperature tolerance; longest span available (up to 500 feet/152m on dual head 2CPS)

165,1 mm x 79,8 mm x 325,9 mm
[6.5 in x 3.14 in x 12.75 in]

-40 °C to 85 °C [-40 °F to 185 °F]

optional hardware packs; heavy-duty terminals: gold contacts; direct opening action of NC contacts (up to 4 contacts); LED status lights

Machine Safety

Safety Sensors



Photoelectric barriers composed of several infrared beams aligned on an emitting column and a receiving column. Separate or self-contained control units, various housing sizes, resolutions, scanning ranges, and protection heights are available. Designed to meet the specifications of potential machine guarding applications from point-of-operation protection, access detection, and presence sensing to electrical-to-machine-circuitry interfacing.



| Series | FF-ST2 Standard A | FF-ST2 Standard M | FF-ST4 Basic |
|---|---|--|--|
| Safety category | Type 2 per IEC61496 (similar to SIL2 per IEC61508) | Type 2 per IEC61496 (similar to SIL2 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) |
| Application (resolution) | finger (18 mm [0.71 in]) hand (30 mm [1.18 in]) limb and body (80 mm [3.15 in]) | finger (18 mm [0.71 in]) hand (30 mm [1.18 in]) limb and body (80 mm [3.15 in]) | finger (14 mm [0.55 in] and 18 mm [0.71 in]) hand (30 mm [1.18 in]) limb and body (80 mm [3.15 in]) |
| Scanning range (resolution) | 0,25 m to 10 m [0.82 ft to 32.81 ft] | 0,25 m to 10 m [0.82 ft to 32.81 ft] | 0 m to 3.5 m [0 ft to 11.48 ft] (14 mm [0.55 in]); 0,25 m to 10 m [0.82 ft to 32.81 ft] |
| Beam separation distance | – | – | – |
| Product cross section | 42 mm x 55 mm [1.65 in x 2.17 in] | 42 mm x 55 mm [1.65 in x 2.17 in] | 42 mm x 55 mm [1.65 in x 2.17 in] |
| Protected height (resolution) | 200 mm to 1400 mm [7.87 in to 55.12 in] (18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in] and 80 mm [3.15 in]) | 200 mm to 1400 mm [7.87 in to 55.12 in] (18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in] and 80 mm [3.15 in]) | 200 mm to 1400 mm [7.87 in to 55.12 in] (14 mm [0.55 in] and 18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in] and 80 mm [3.15 in]) |
| Differentiator | robust housing | robust housing | robust housing |
| Connectors | M12/5 pole (100 m [328.08 ft]) | M12/5 pole (100 m [328.08 ft]) | M12/5 pole (100 m [328.08 ft]) |
| Basic interface module | FF-SRE60292 | FF-SRE60292 | FF-SRL60252 or AS-i Safe |
| External device monitoring (EDM) | yes | yes | no |
| Automatic restart | yes | no | yes |
| Restart interlock | no | yes | no |
| Muting (or bypass) | – | – | no |
| 1- or 2-beam floating blanking | – | – | no |
| AS-i safe module | – | – | yes |
| PSDI¹ module | – | – | yes |
| Emergency stop auxiliary inputs | – | – | no |

¹ For the automatic machine cycle start upon beam clearance (Presence Sensing Device Initiation).



| FF-ST4 Standard | FF-ST4 Advanced B | FF-ST4 Advanced M | FF-SYB (point of op.) | FF-SYB (long range) | FF-SYB (short range) |
|---|---|---|--|---|---|
| Type 4 per IEC61496 (similar to SIL3 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) | Type 4 per IEC61496 (similar to SIL3 per IEC61508) |
| finger (14 mm [0.55 in] and 18 mm [0.71 in]); hand (30 mm [1.18 in]); limb and body (80 mm [3.15 in]) | finger (14 mm [0.55 in] and 18 mm [0.71 in]); hand (30 mm [1.18 in]) | finger (14 mm [0.55 in] and 18 mm [0.71 in]); hand (30 mm [1.18 in]); limb and body (80 mm [3.15 in]) | finger (14 mm [0.55 in]) hand (30 mm [1.18 in]) | body (2, 3, or 4 beams) | body (2 beams) |
| 0 m to 3.5 m [0 ft to 11.48 ft] (14 mm [0.55 in]); 0,25 m to 10 m [0.82 ft to 32.81 ft] | 0 m to 3.5 m [0 ft to 11.48 ft] (14 mm [0.55 in]); 0,25 m to 10 m [0.82 ft to 32.81 ft] | 0 m to 3.5 m [0 ft to 11.48 ft] (14 mm [0.55 in]); 0,25 m to 10 m [0.82 ft to 32.81 ft] | 0 m to 6 m [0 ft to 19.69 ft] (14 mm [0.55 in]); 0 m to 20 m [0 ft to 65.62 ft] (30 mm [1.18 in]) | 0 m to 30 m [0 ft to 98.43 ft] (standard range) 5 m to 80 m [16.40 ft to 262.47 ft] (long range) | 0 m to 7 m [0 ft to 22.97 ft] with passive mirrors |
| - | - | - | - | 2-beam: 500 mm [19.69 in] spacing (body/access) 3-beam: 400 mm [15.75 in] spacing (body/access) 4-beam: 300 mm [11.81 in] spacing (body/access) | 2-beam: 500 mm [19.69 in] beam spacing (body/access) |
| 42 mm [1.65 in] x 55 mm [2.17 in] | 42 mm [1.65 in] x 55 mm [2.17 in] | 42 mm [1.65 in] x 55 mm [2.17 in] | 42 mm [1.65 in] x 55 mm [2.17 in] | 42 mm [1.65 in] x 55 mm [2.17 in] | 42 mm [1.65 in] x 55 mm [2.17 in] |
| 200 mm to 1400 mm [7.87 in to 55.12 in] (14 mm [0.55 in] and 18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in] and 80 mm [3.15 in]) | 200 mm to 1400 mm [7.87 in to 55.12 in] (14 mm [0.55 in] and 18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in]) | 200 mm to 1400 mm [7.87 in to 55.12 in] (14 mm [0.55 in] and 18 mm [0.71 in]); 200 mm to 1800 mm [7.87 in to 70.87 in] (30 mm [1.18 in] and 80 mm [3.15 in]) | 300 mm to 1800 mm [11.81 in to 70.87 in] (14 mm [0.55 in], 30 mm [1.18 in]) | - | - |
| robust housing, selection through wiring | robust housing, selection through wiring | robust housing, selection through wiring | fully bundled functionality, selections through micro-cards, long scanning ranges | fully bundled functionality, selections through micro-cards | fully bundled functionality, selections through micro-cards |
| M12/5 and 8 pole (100 m [328.08 ft]) | M12/5 and 8 pole (100 m [328.08 ft]) | M12/5 and 8 pole (100 m [328.08 ft]) | M12/5 and 8 pole (100 m [328.08 ft]) | M12/5 and 8 pole (100 m [328.08 ft]) | M12/8 pole (100 m [328.08 ft]) |
| FF-SRE60292 | FF-SRE60292 | FF-SRE60292 | FF-SRE60292 | FF-SRE60292 | FF-SRE60292 |
| yes | yes | yes | yes | yes | yes |
| yes | yes | yes | yes | yes | yes |
| yes | yes | yes | yes | yes | yes |
| no | no | yes | yes | yes | yes |
| no | yes | no | yes | yes | no |
| no | no | no | yes | - | - |
| no | no | no | yes | - | - |
| no | no | no | yes | yes | yes |

Machine Safety

Safety Modules



Provide an interface between safety sensors and machine control circuitry. Module functionality includes safety door monitoring, emergency stop, two-hand control, extension, standstill and low speed monitoring, time delay, and muting.



| Series | FF-SRS Emergency Stop | FF-SRST Emerg. Stop (del. contacts) | FF-SR2 Two-hand Controls |
|-------------------------------|---|---|--|
| Potential applications | emergency stop device; door monitoring | delayed emergency stop device; door monitoring with solenoid key switch | machine cycle start |
| Safety category | Cat. 2 or 4 per EN954-1 | Cat. 3 and 4 per EN954-1 | Cat. IIIA and IIIC per EN574 |
| Housing width | 22,5 mm [0.89 in] 45 mm [1.77 in] 100 mm [3.94 in] | 45 mm [1.77 in] | 22,5 mm [0.89 in], 45 mm [1.77 in] |
| Supply voltage | 24 Vdc, 120 Vac, 230 Vac | 24 Vac/dc | 24 Vdc, 120 Vac, 230 Vac |
| Output contact | 3 NO/1 NC, 6 NO/1 NC | 2 NO/1 NC direct, 2 NO/1 NC delayed | 2 NO, 2 NO/1 NC, 3 NO/1 NC |
| Switching capacity | 10 mA to 5 A, 1 mA to 10 A | 1 mA to 5 A | 1 mA to 5 A, 1 mA to 10 A |
| Embedded functions | input short-circuit and cross- fault detection; manual/auto restart with EDM loop | manual/auto restart with EDM loop; selectable time ranges | 0.5 s input time monitoring |
| Differentiator | removable terminal strips; enhanced switching capacity; ac supply voltages | removable terminal strips | removable terminal strips; enhanced switching capacity; ac supply voltages |
| Approvals | complies with EU directive for machines 98/37/EC, IEC/EN 60501, DIN VDE 0113, and UL 508 | complies with EU directive for machines 98/37/EC, IEC/EN 60501, DIN VDE 0113, and UL 508 | complies with machinery direc- tive 98/37/EC and UL 508 |



FF-SR0 Standstill Monitoring

FF-SRT Delayed Extension

FF-SRL Basic

FF-SRL59022 PSDI

FF-SRM Muting

FF-SRE Extension

| | | | | | |
|---|---|--|--|---|---|
| motor control | delayed emergency stop device; contact multiplication; current switching capacity | safety device with solid state outputs | automatic machine cycle start | momentary deactivation of the safety light curtain | contact multiplication; current switching capacity |
| Cat. 1 and 3 per EN954-1 | Cat. 1 per EN954-1 | Cat. 4 per EN954-1 | Cat. 4 per EN954-1 | Cat. 4 per EN954-1 | Cat. 1 per EN954-1 |
| 45 mm [1.77 in] | 45 mm [1.77 in] | 22,5 mm [0.89 in] 45 mm [1.77 in] | 45 mm [1.77 in] | 45 mm [1.77 in] | 22,5 mm [0.89 in], 100 mm [3.94 in] |
| 24 Vdc, 120 Vac, 230 Vac | 24 Vdc | 24 Vdc | 24 Vdc | 24 Vdc | 24 Vac/dc, 120 Vac, 230 Vac |
| 2 NO/1 NC, 2 NO/2 NC | 1 NO/1 NC | 3 NO/1 NC | 3 NO | 3 NO | 4 NO + 2 NC, 7 NO + 1 NC |
| 1 mA to 4 A, 10 mA to 10 A | Up to 8 A | 10 mA to 5 A, 1 mA to 10 A | 1 mA to 5 A | 1 mA to 5 A | 10 mA to 5 A, 1 mA to 10 mA |
| motor back EMF monitoring or rotation frequency measurement | selectable time ranges | manual/auto restart with EDM loop | manual restart with EDM loop; presence sensing device initiation: single or dual stroke with selectable time window | manual/auto restart with EDM loop; 2 or 4 muting inputs; 1 or 2 light curtains; muting lamp; auxiliary emergency stop circuit | redundant relay outputs (pair of safety relays with guided contacts) |
| removable terminal strips; enhanced switching capacity; ac supply voltages | dual timing circuit | removable terminal strips; enhanced switching capacity | removable terminal strips | removable terminal strips | removable terminal strips; high switching capacity; ac supply voltages |
| complies with machinery 98/37/EC and UL 508; designed for category 1 emergency stop functions per EN 418 and NFPA79 | complies with machinery directive 98/37/EC, IEC 255, VDE 0435 and UL 508 | complies with EU machinery directive 98/37/EC, IEC 204, EN 60204, DIN VDE 0113 | complies with IEC 61508 and EN 61496-1 European standards; meets applicable parts of the US and Canadian regulations and standards | per the EN 354-1 and EN 61496-1 European standards; meets applicable parts of the US and Canadian regulations and standards ANSI/RIA/OSHA | complies with the machinery directive 98/37/EC, IEC 204, EN 60204, DIN VDC 0113, and UL 508 |



As one of the world's leading providers of sensors and switches, Honeywell understands and meets the requirements of a wide variety of industries.

Honeywell Sensing and Control is a global leader in providing reliable, cost-effective sensing and switching solutions for our customers' applications. We serve thousands of customers in four core industry segments: industrial, medical equipment, transportation, and aerospace/military products.

Aerospace

Aerospace applications are among the most demanding for any type of product. Rigorous FAA requirements, extreme environments (temperature, shock, vibration, the need for hermetic sealing), and the ability to customize devices are just a few of the parameters often required of sensors and switches in these applications. Aerospace customers typically value speed in prototyping and development, and Honeywell's vertically integrated, AS9100-approved manufacturing locations enhance our ability to produce devices in a wide variety of packages. The precision output of our products helps reduce risk and cost in key applications while also minimizing the need for unscheduled maintenance.

Honeywell's in-depth aerospace engineering experience allows us to work with customers in the design and development of

products that best meet the specified requirements of their individual applications. Making products simple to install makes the job easier every step of the way. And, the odds are that Honeywell is already on the list of trusted suppliers for many aerospace companies, underscoring the decades of experience we bring to this field.

Honeywell products for this industry (many of them PMA-certified) include force sensors, load cells, potentiometers, pilot controls, pressure sensors, pressure switches, resolvers, sensor/actuator assemblies for systems ranging from aerostructures to fuel control to flight surfaces, speed sensors, temperature probes, thermostats, torque sensors, y-guides for cargo systems, MICRO SWITCH™ sealed and high-accuracy switches, MICRO SWITCH™ pushbutton switches, and MICRO SWITCH™ rocker and toggle switches.

Medical

Medical applications typically require sensors and switches that are highly stable and extremely reliable to enhance patient safety and comfort. Stability is often essential to minimize long term drift, reduce the need for recalibration, and improve ease of use for medical equipment operators. Reliability enhances patient safety in life-critical applications, reduces downtime, and improves test throughput in applications such as clinical diagnostics. The product needs to be easy to use and easy to design into a system, so Honeywell's extensive customization and built-in calibration/amplification capabilities are strong benefits. Confidence in Honeywell's product performance, reliability, and availability provide peace of mind for medical equipment manufacturers who choose Honeywell.

Honeywell offerings for this industry include airflow sensors, silicon and stainless steel media isolated pressure sensors, Hall-effect magnetic position sensors, humidity sensors, flexible heaters, force sensors, thermostats, commercial solid state sensors, infrared sensors, oxygen sensors, pressure and vacuum switches, potentiometers and encoders, MICRO SWITCH™ pushbutton, rocker, and toggle switches, and hour meters.

Industrial

The industrial arena can be a rough one. From high-speed food processing to high-force stamping applications, reliable and cost-effective sensors and switches often help minimize repair costs, maximize system life, and reduce overall system expense. Durability can mean the difference between smooth-running processes and expensive downtime. Accurate, repeatable sensor or switch output can reduce the need for calibration once the device is applied. Because of the wide variety of potential applications, Honeywell's ability to deliver a customized product that can meet virtually any size, weight, and power requirement – as well as any packaging stipulations for tough, harsh environments – often makes it easy to incorporate and use our

devices. Safety is another important consideration for industrial users, and our products meet a wide variety of regulatory safety requirements.

Honeywell's industrial product line includes airflow sensors, current sensors, humidity sensors, fiber-optic and liquid-level sensors, linear position sensors, oxygen sensors, pressure sensors, potentiometers and encoders, speed sensors, temperature probes, ultrasonic sensors, wirewound resistors, thermostats, commercial solid state sensors, flex heaters, SMART position sensors, silicon and stainless steel media isolated pressure sensors, force sensors, safety light curtains, push-pull switches, and MICRO SWITCH™ snap-action switches, hazardous area switches, safety switches, key and rotary switches, limit switches, sealed and high-accuracy switches, pushbutton, rocker, toggle switches, and relays.

Transportation

Getting from Point A to Point B is often challenging for end-customers of transportation providers – Honeywell aims to make the trip easier with highly reliable, cost-effective switches and sensors. Our products are designed to support rigorous engine requirements, and their efficiency can also help optimize engine performance. Customization is often required to allow a switch or sensor to be mounted in tight or challenging environments including vibration, temperature extremes, and road contamination. The durability of Honeywell products enhances system reliability, which is also boosted by the stable, accurate output of our devices. All of these capabilities allow demanding customers to rely on Honeywell's many years of experience in the transportation industry.

Honeywell products for transportation applications include Hall-effect rotary position sensors, inertial measurement units, infrared sensors, keyless entry sensors, magnetic position sensors, pressure sensors, speed and direction sensors, ultrasonic sensors, thermostats, temperature probes, commercial solid state sensors, SMART position sensors, and MICRO SWITCH™ pushbutton, rocker, and toggle switches.



Sensing and Control Product Portfolio

Product reliability. Industry knowledge. Expertise. Standard with every order.

With more than 50,000 sensing, switching, and control products ranging from snap-action, limit, toggle, and pressure switches to position, speed, pressure, and airflow sensors, Honeywell Sensing and Control has one of the broadest sensing and switching portfolios available.

SENSORS



Airflow sensors: Advanced microstructure technology. Sensitive and fast response to flow, amount/direction of air or other gas. Proportional output voltage. Thin-film, thermally isolated bridge structure consists of a heater and temperature sensing elements. **May be used in:** HVAC, respirators, process control, oxygen concentrators, gas metering, chromatography, leak detection equipment, medical/analytical instrumentation, and ventilation equipment.



Current sensors: Accurate and fast response. Almost no thermal drift or offset with temperature. Adjustable linear, null balance, digital, and linear current sensors. **May be used in:** Variable speed drives, overcurrent protection, power supplies, ground fault detectors, robotics, industrial process control, and wattmeters.



Flexible heaters: Flat, molded-to-shape, spiral wrap, transparent, composite, and high temperature configurations with single, multiple, and variable watt densities. Can be bonded parts or combined. **May be used in:** Airborne valves, outdoor cameras, LCD displays, scanners, and telecommunication.



Force sensors: Variety of package styles and various electrical interconnects including pre-wired connectors, printed circuit board mounting, and surface mounting for flexibility. **May be used in:** Infusion and syringe pumps, blood pressure equipment, pump pressure, drug delivery systems, occlusion detection, and kidney dialysis machines.



Humidity sensors: Configured with integrated circuitry. Provide on-chip signal conditioning with interchangeability of $\pm 3\%$ accuracy and out-of-the-box reliability. Standardized, platform-based sensors. **May be used in:** Air compressors, food and beverage packaging and processing, HVAC, printing presses, and office equipment.



Infrared sensors: IREDS, sensors, and assemblies for object presence, limit and motion sensing, position encoding, and movement encoding. Variety of package styles, materials, and terminations. **May be used in:** Printers/copiers, motion control systems, metering, data storage systems, scanning, automated transaction, drop sensors, and non-invasive medical equipment.



Magnetic sensors: Digital and analog Hall-effect position sensor ICs, magnetoresistive position sensor ICs, Hall-effect vane, gear-tooth, and magnetic sensors. **May be used in:** Speed and RPM sensing, motor/fan control, magnetic encoding, disc speed, tape, flow-rate sensing, conveyors, ignitions, motion control/detection, power/position, magnetic code reading, vibration, and weight sensing.



Position sensors: SMART position sensor: Superior Measurement, Accuracy, Reliability, and Thinking. The most accurate linear position sensor available in the industry (0.05 mm [0.002 in]), enabling highly accurate motion control, and improving efficiency and safety. Non-contact design eliminates mechanical failure mechanisms, reducing wear and tear, improving reliability and durability, and minimizing downtime. Robustness in most harsh environments. Easy to install, reducing set-up costs. Potentiometric sensors withstand harsh chemicals and immersion into oils or water. Extended life PTFE bearings, precious metal multi-finger contact wipers, and MYSTR® conductive plastic thick-film elements. Analog output correlated to location. **May be used in:** Injection molding, printing presses, cylinder positioning, gauges, controls, aircraft, elevators, material handling, packaging, molding, valves, wafer handling, and woodworking machinery.



Pressure sensors - silicon: Full line of industrial-grade sensors: media-isolating design, multiple ports and outlets, and electrical configurations. **May be used in:** Pneumatic controls, air compressors, process monitoring, hydraulic controls, VAV controls, clogged filter detection, presence/absence of flow, transmissions, and refrigeration.



Pressure sensors - stainless steel media isolated: Bonded strain gage technology. Very resistant to effects of shock, vibration, and hostile environments. **May be used in:** HVAC, hydraulic controls, suspensions, agricultural equipment, engines, compressors, robotics, industrial and automotive systems, pressure transmitters, process controls, and medical diagnostics.



Proximity sensors: Designed to meet demanding temperature, vibration, shock, and EMI/EMP interference requirements. Number of housing materials and termination styles. **May be used in:** Aircraft landing gear, gun turret position control, and door and hatch open/closed monitoring.



Rotary position sensors: Digital and analog Hall-effect, magnetoresistive, and potentiometric devices for sensing presence of a magnetic field or rotary position. Directly compatible with other electronic circuits for application flexibility. **May be used in:** Audio and lighting, frequency, temperature, position, time, medical/instrumentation, computer peripherals, manual controls, joysticks, telecommunication, welding, heating, and aerospace.



Speed sensors: Measure speed, position, and presence detection utilizing magnetoresistive, variable reluctance, Hall-effect, variable inductance, and Spiral technologies. **May be used in:** Cam and crankshafts, transmissions, fans, pumps, mixers, rollers, compressors, industrial process control, engines/motors, wheels, and tachometers.



Temperature sensors: Customized probes, thermistors, and RTD sensors. Plastic/ceramic, miniaturized, surface-mount housings, and printed circuit board terminations. **May be used in:** Semi-conductor protection, vending machines, power generation, hydraulic systems, thermal management, and temperature compensation.



Thermostats: Commercial and precision snap-action. Automatic or manual reset options, phenolic or ceramic housings. **May be used in:** Telecommunications, battery heater controls, computers, copy machines, fax machines, food service, food carts, small and major appliances, heat and smoke detectors, and HVAC equipment.



MICRO SWITCH™ pushbutton switches: Lighted or unlighted. Wide range of electrical and display design, pushbuttons, and manual switches. Many shapes, sizes, and configurations. Easy to apply, operate, and maintain. **May be used in:** Control boards and panels, industrial and test equipment, computers, medical instrumentation, and aerospace.



MICRO SWITCH™ rocker switches: Wide range of electrical and display design. Many shapes, sizes, and configurations to enhance manual operation. **May be used in:** Transportation, agricultural and construction equipment, test equipment, heavy-duty machinery, marine equipment, small appliances, telecom, medical instrumentation, and commercial aviation.



MICRO SWITCH™ toggle switches: Wide range of electrical and display design. Available in many shapes, sizes, and configurations. **May be used in:** Aerial lifts, construction equipment, agriculture and material-handling equipment, factory-floor controls, process control, medical instrumentation, test instruments, and military/commercial aviation.



MICRO SWITCH™ aerospace-grade pressure switches: lightweight, compact pressure switches sense changes in gas/pressure. Qualified to MIL-PFR-8805 and its lower operating force provides application versatility with enhanced precision. Design modularity allows for configuration of the switch, facilitating rapid customization to the precise, demanding requirements. **May be used in:** aerospace systems -including engines, fuel pressure, and hydraulic systems, military ground vehicles, ordnance and munitions release systems, military maritime systems.



Pressure and vacuum switches: Feature set points from 0.5 psi to 3000 psi. Rugged components have enhanced repeatability, flexibility, and wide media capability. **May be used in:** Transmissions, hydraulics, brakes, steering, generators/compressors, dental air, embalming equipment, oxygen concentrators, air cleaners, fuel filters, and pool water pressure.

ELECTROMECHANICAL SWITCHES



MICRO SWITCH™ snap-action series: Snap-action precision switches. Compact. Lightweight. Designed for repeatability and enhanced life. Premium and standard snap-action switches: standard, miniature, subminiature, hermetically sealed, and high-temperature versions. **May be used in:** Vending machines, communication equipment, HVAC, appliances, electronic gaming machinery, valve controls, irrigation systems, foot switches, pressure, and temperature controls.



MICRO SWITCH™ hazardous area switches: Flame path designed to contain and cool escaping hot gases that could cause an explosion. MICRO SWITCH™ EX, BX, CX, and LSX Series. **May be used in:** Grain elevators and conveyors, off-shore drilling, petrochemical, waste-treatment plants, control valves, paint booths, and hazardous waste handling facilities.



Key and rotary switches: Used on machinery in harsh environments. O-rings help keep dirt and moisture out and prolong life. **May be used in:** All-terrain vehicles, golf carts, snowmobiles, scissor lifts, telehandlers, construction and marine equipment, skid loaders, agricultural equipment, material handlers.



MICRO SWITCH™ limit switches: Broadest and deepest limit switch portfolio. Rugged, dependable position detection solutions. MICRO SWITCH™ heavy-duty limit switches (HDLS) and global limit switches. Hermetically and environmentally sealed switches. **May be used in:** Machine tools, woodworking, textile, and printing machinery, metal fabrication, balers/compactors, forklifts, bridges, robotics, wind turbines, elevators, moving stairs, doors, dock locks/levelers, aerial lifts, cranes, conveyors, rail, shipboards, and dock side.



MICRO SWITCH™ sealed and high accuracy switches: Precision 'snap action' mechanisms. Wide variety of actuators, terminations, circuitry configurations, electrical ratings, contact materials, and operating characteristics. **May be used in:** Landing gear, flap/stabilizer controls, thrust reversers, space vehicles, armored personnel carriers, de-icer controls, wingfold actuators, industrial environments, valves, and underwater.

SAFETY PRODUCTS



MICRO SWITCH™ safety switches: For operator point-of-operation protection, access detection, presence sensing, gate monitoring, and electrical interfacing. High-quality, dependable, cost-effective solutions. **May be used in:** Packaging and semi-conductor equipment, plastic-molding machinery, machine tools, textile machines, lifts, industrial doors, bailers, compactors, aircraft bridges, telescopic handlers, refuse vehicles.



Safety light curtains: Different resolutions permit detection of an approaching finger, hand, limb, or body. Separate or self-contained control units, various housing sizes, resolutions, scanning ranges, and protection heights. **May be used in:** Point-of-operation protection, access detection, presence sensing, gate monitoring, electrical-to-machine-circuitry interfacing, emergency stop circuits on machines, sliding door protection, conveyors, and transfer lines.

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 acknowledgment 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.

Find out more

To learn more about Honeywell's sensing and control products, call **+1-815-235-6847**, email inquiries to **info.sc@honeywell.com**, or visit **www.honeywell.com/sensing**

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WARNING

MISUSE OF DOCUMENTATION

- The information presented in this literature 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.

For products not designed for safety applications:

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.

For products designed for safety applications:

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.

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