



**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™ Snap-Action Series

## Premium and Standard V-Series Switches



Simple or precision on/off, end of limit, presence/absence, pressure, temperature, and manual operator interface application needs. Potential uses include a variety of applications, including business equipment, valves, manually operated devices, vending machines, water heaters, appliances, and industrial controls.



Series	V7	V15
<b>Type</b>	premium	standard
<b>Amp rating</b>	0.1 A to 25 A	5 A to 26 A
<b>Circuitry</b>	SPDT, SPNO, SPNC	SPDT, SPNO, SPNC
<b>Operating force</b>	0.7 oz max. to 14.6 oz max.	US: ≥ 100 g (16 A to 26 A) AP: 15 g to 400 g (5 A to 26 A)
<b>Terminations</b>	quick connect, pc board, pcb straight angle left	quick connect, direct wire connection with no terminals, RAST
<b>Actuators/levers</b>	pin plunger, straight, short flag, roller, sim. roller, curved tip, loop, paddle	pin plunger, straight, roller, sim. roller
<b>Voltage</b>	125 Vac, 250 Vac, 277 Vac	125 Vac, 250 Vac
<b>Approvals</b>	UL, CSA, ENEC	UL, cUL, ENEC, CQC
<b>Operating temperature range</b>	-40 °C to 150 °C [-40 °F to 302 °F]	-25 °C to 150 °C [-13 °F to 300 °F]
<b>Contacts</b>	silver, silver cadmium oxide, gold	silver cadmium oxide
<b>Housing material</b>	PCT polyester thermoplastic	PBT polyester thermoplastic
<b>Measurements</b>	15,9 mm H x 10,2 mm W x 28,8 mm L [0.63 in H x 0.4 in W x 1.14 in L]	15,9 mm H x 10,3 mm W x 27,8 mm L [0.63 in H x 0.41 in W x 1.09 in L]
<b>Features</b>	extended mechanical and electrical life; custom engineered solutions	broad range of electrical loads; wide temperature range; limited configuration options available

# MICRO SWITCH™ Snap-Action Series

## Premium and Standard Miniature and Subminiature Switches

Designed for high precision, presence and absence detection, where physical contact with an object is permissible and in simple on-and-off actions. These compact, highly reliable and rugged switches are used in potential applications including aerospace, HVAC, instrumentation, office equipment, medical/dental, valves, and vending machines.



Series	SM	SX
<b>Type</b>	premium	premium
<b>Amp rating</b>	0.1 A to 11 A	1 A to 7 A
<b>Circuitry</b>	SPDT	SPDT, SPNO
<b>Operating force</b>	0.04 oz to 2 oz	0.71 oz to 6 oz
<b>Terminations</b>	quick connect, solder, pcb	quick connect, solder, pcb
<b>Actuators/levers</b>	pin plunger, straight, roller, sim. roller, paddle	pin plunger, straight, roller, sim. roller, offset flag, crossed roller
<b>Voltage</b>	115 Vac, 125 Vac, 250 Vac, 30 Vdc	125 Vac, 250 Vac, 28 Vdc
<b>Approvals</b>	UL, CSA, ENEC, CE	UL, CSA, ENEC, CE
<b>Operating temperature range</b>	-55 °C to 125 °C [-67 °F to 267 °F]	-55 °C to 125 °C [-67 °F to 267 °F]
<b>Contacts</b>	silver, gold	silver, gold
<b>Housing material</b>	phenolic	phenolic or Valox®
<b>Measurements</b>	12,7 mm H x 6,35 mm W x 20,3 mm L [0.5 in H x 0.25 in W x 0.8 in L]	12,7 mm H x 6,35 mm W x 20,3 mm L [0.5 in H x 0.25 in W x 0.8 in L]
<b>Features</b>	extended operating life; elongated mounting holes; MIL-PRF-8805 qualified listings available	extended operating life; elongated mounting holes; MIL-PRF-8805 qualified listings available





ZD	ZM	ZV	ZW	ZX
standard	standard	standard	standard	standard
0.1 A, 3 A	0.1 A, 5 A, 10.1 A	0.1 A, 6 A, 10.1 A	0.1 A, 5 A	0.1 A, 3 A
SPDT	SPST, SPDT, SPNO	SPDT, SPNO, SPNC	SPDT, SPNO, SPNC	SPDT
130 gf to 195 gf	0.18 oz to 8.78 oz	0.78 oz to 11.01 oz	1.94 oz to 7.16 oz	0.53 oz to 5.3 oz
solder, pcb straight, pcb left angle, pcb right angle, pre-wired	quick connect, solder, pcb	quick connect, solder, pcb	quick connect, solder, cable bottom/end, cable side exit	solder, pcb snap-in, pcb left angle, pcb right angle
pin plunger, straight, sim. roller	pin plunger, straight, roller, sim. roller, L-shaped	pin plunger, straight, roller, sim. roller	pin plunger, straight, roller, sim. roller	pin plunger, straight, sim. roller, special
125 Vac, 12 Vdc	125 Vac, 250 Vac, 30 Vdc	125 Vac/125 Vdc; 6 (2) A, 250 Vac	125 Vac, 250 Vac	125 Vac, 48 Vdc
UL, cUL, CE, ENEC	UL, CSA, CE	UL, cUL, ENEC, CE	UL, cUL, CE, ENEC	UL, CSA
-40 °C to 85 °C [-40 °F to 185 °F]	-25 °C to 85 °C [-13 °F to 185 °F]	-25 °C to 85 °C [-13 °F to 185 °F]	-25 °C to 80 °C [-13 °F to 176 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
silver, gold-plated silver	silver, gold-plated silver, silver-tin-indium oxide	silver, gold-plated silver, silver-tin-indium oxide	silver, gold-plated silver	silver, gold-plated silver
PBT polyester	polyamide (nylon)	polyamide (nylon)	PBT (polyester)	polyamide (nylon)
10,6 mm H x 6,35 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	10,6 mm H x 6,4 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	10,6 mm H x 6,4 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	9,0 mm H x 6,4 mm W x 19,8 mm L [0.36 in H x 0.25 in W x 0.78 in L]	6,5 mm H x 5,7 mm W x 12,7 mm L [0.26 in H x 0.22 in W x 0.50 in L]
low energy or power-duty electrical ratings; gold-plated or silver contacts; PBT polyester housing material	low energy or power-duty electrical ratings; gold-plated or silver contacts	low energy or power-duty electrical ratings; gold-plated or silver contacts	IP67 available; low energy or power-duty electrical ratings; gold-plated or silver contacts; PBT polyester housing material	low energy or power-duty electrical ratings; gold-plated or silver contacts; polybutylene terephthalate housing

# MICRO SWITCH™ Snap-Action Series

## Large Switches and Accessories

Often ideal for high cost-of-failure applications. Low operating force and differential travel. Current ratings from 10 A to 25 A. Designed to withstand 100K operations at full load or 10M for mechanical life. Have been used in a variety of applications including irrigation, transportation, medical/dental, valves, office equipment, presses, machine tools, and HVAC.



Series	BZ/BA/BM/BE	DT
Type	premium	premium
Amp rating	15 A (BZ), 22 A (BM), 20 A (BA), 25 A (BE)	10 A
Circuitry	SPDT	DPDT
Operating force	1.0 oz to 28 oz	7.0 oz to 10.0 oz
Terminations	quick connect, solder, screw	screw
Actuators/levers	pin plunger, overtravel plunger, straight, roller, flexible roller leaf, flexible leaf	pin plunger
Voltage	115 Vac, 125 Vac, 250 Vac	250 Vac, 28 Vdc
Approvals	UL, CSA, ENEC, CE (varies by model)	UL, CSA
Operating temp. range	-55 °C to 85 °C [-67 °F to 185 °F]	-55 °C to 85 °C [-67 °F to 185 °F]
Contacts	silver, silver cadmium oxide	silver
Housing material	general purpose phenolic	general purpose phenolic
Measurements	25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]	25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]
Features	worldwide standard "large snap-action" switch; low operating force and travel; extended mechanical life; momentary or maintained actions	mounting interchangeability with BZ Series switches; permits several wiring combinations



Series	8MA1	8MA2	17MA1-B
Type	adjustable mounting bracket	adjustable mounting bracket	conversion mounting bracket
Description	adjustment slot on the left	adjustment slot on the right	—
Housing material	steel	steel	corrosion-resistant metal
Measurements	60,2 mm W x 21,3 mm H x 7,4 mm D [2.37 in W x 0.84 in H x 0.29 in D]	60,2 mm W x 21,3 mm H x 7,4 mm D [2.37 in W x 0.84 in H x 0.29 in D]	66,8 mm W x 19,0 mm D [2.63 in W x 0.75 in D]
Features	sturdy plated steel construction; fast, easy screwdriver adjustment; can be used with all standard snap-action switches	sturdy plated steel construction; fast, easy screwdriver adjustment; can be used with all standard snap-action switches	converts standard snap-action switches from side to top mount; corrosion resistant; snaps into switch mounting holes without tools





MT	3MN	6AS	AC	DM
premium	premium	premium	special application	special application
10 A	15 A	10 A, 15 A, 20 A	5 A to 25 A	10 A, 16 A
SPDT	two circuit, double break (2 CKT DB)	SPDT	SPDT	SPDT, DPDT
2.0 oz to 18 oz	7.0 oz to 20 oz	8 oz to 14 oz	–	4,17 N [15 oz] max.
screw	screw	solder, screw, A2, T	turret-type solder, screw, flying leads	quick connect
pin plunger, straight, roller	pin plunger	straight, roller, leaf	rod	bullet nose plunger
125 Vac, 125 Vdc	480 Vac	125 Vac, 250 Vac, 480 Vac	125 Vac, 250 Vac, 480 Vac, 30 Vdc	125 Vac, 250 Vac, 277 Vac
UL, CSA	UL, CSA	UL	UL versions available	UL, CSA
-55 °C to 82 °C [-67 °F to 180 °F]	-55 °C to 85 °C [-67 °F to 185 °F]	-55 °C to 85 °C [-67 °F to 185 °F]	-54 °C to 121 °C [-65 °F to 250 °F]	-37 °C to 82 °C [-35 °F to 180 °F]
silver	silver	silver	silver	silver
arc resistant melamine	general purpose phenolic	general purpose phenolic	die-cast stainless steel bracket, stainless steel or polyester rod	polyester
25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]	25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]	20,1 mm H x 35,1 mm W x 49,3 mm L [0.79 in H x 1.38 in W x 1.94 in L]	varies by model	48,8 mm H x 31,8 mm W x 14,0 mm D [1.93 in H x 1.25 in W x 0.55 in D]
mounting interchangeability with BZ/BA Series switches; arc-extinguishing design in contact area; arc-resistant case	double-break circuitry; extended mechanical life; space between terminals reduces possibility of shorting; arc-resistant plastic	tandem switch assembly; field adjustable operating point on one or both snap-action switches	cuts power when door/drawer is opened; momentary, maintained or pull-to-cheat actuation; one or two SPDT switches	easy installation; momentary, alternate push-pull, or pull-to-cheat operation; expected mechanical life: 1 million operations, 95% survival



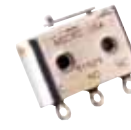
3PA1	3PA28	3PA2	5PA1	5PA2	5PA3
die-cast zinc enclosure (side mount)	die-cast zinc enclosure (side mount)	die-cast zinc enclosure (flange mount)	plastic terminal enclosure	plastic terminal enclosure	plastic terminal enclosure
mounted from either side through 3,55 mm [0.140 in] dia. holes on 25,4 mm [1.0 in] centers	mounted from either side through 3,55 mm [0.140 in] dia. holes on 25,4 mm [1.0 in] centers. 1/2-14 NPSM internal thread conduit hub	switch secured in enclosure; two 4,37 mm [0.172 in] dia. holes in flange accept #8 screws for mounting on 41,3 mm [1.625 in] centers	used with solder terminal switches	use with screw terminal switches	used with either solder or screw terminal switches with auxiliary actuators assembled
die-cast zinc	die-cast zinc	die-cast zinc	plastic	plastic	plastic
74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D]	74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D]	74,8 mm W x 42,9 mm H x 25,4 mm D [2.95 in W x 1.69 in H x 1.00 in D]	52,8 mm W x 16,1 mm H [2.08 in W x 0.64 in H]	52,8 mm W x 20,2 mm H x 21,0 mm D [2.08 in W x 0.80 in H x 0.83 in D]	52,8 mm W x 20,2 mm H x 21,0 mm D [2.08 in W x 0.80 in H x 0.83 in D]
protects the switch from physical abuse and personnel from contact with exposed terminals	protects the switch from physical abuse and personnel from contact with exposed terminals	protects the switch from physical abuse and personnel from contact with exposed terminals	easy to use; screw and solder terminal versions; protect personnel from contact with exposed terminals	easy to use; screw and solder terminal versions; protect personnel from contact with exposed terminals	easy to use; screw and solder terminal versions; protect personnel from contact with exposed terminals

# MICRO SWITCH™ Snap-Action Series

## Sealed Switches



Sealed switches are snap-action precision switches enclosed within a corrosion-resistant aluminum housing that seals the switch contacts from contamination. These sealed switches have often been used in aerospace, ordnance, industrial, marine, and transportation applications.



Series	SE/XE	HM
<b>Type</b>	anodized aluminum	stainless steel
<b>Sealing</b>	MIL-PRF-8805, symbol 3	MIL-PRF-8805, symbol 5, hermetic
<b>Operating temperature range</b>	-53 °C to 105 °C [-65 °F to 221 °F]	-65 °C to 121 °C [-85 °F to 250 °F] high temp available: 500 °F
<b>Actuators/levers</b>	auxiliary actuators available	integral lever; aux. actuators: leaf, roller leaf, straight, roller lever
<b>Termination</b>	solder, leadwire	solder, leadwire
<b>Circuitry</b>	SPDT	SPDT
<b>Contacts</b>	silver, gold, bifurcated gold	silver, gold, bifurcated gold
<b>Amp rating</b>	7 A max.	0.5 A to 3 A
<b>Approvals</b>	CE, UL/CSA, MIL-PRF-8805 (selected listings)	MIL-PRF-8805
<b>Measurements</b>	SE: 19,05 mm H x 8,64 mm W x 22,35 mm L [0.75 in H x 0.34 in W x 0.88 in L] XE: 19,05 mm H x 8,13 mm W x 15,75 mm L [0.75 in H x 0.32 in W x 0.62 in L]	12,7 mm H x 6,35 mm W x 20,3 mm L [0.5 in H x 0.25 in W x 0.8 in L]
<b>Features</b>	watertight and military standard construction per MIL-PRF-8805; corrosion-resistant aluminum housing	hermetically sealed per MIL-S-8805; high temperature construction; reduced sensitivity to changes in altitude or pressure



Series	HS
<b>Type</b>	stainless steel, phenolic
<b>Sealing</b>	MIL-PRF-8805, symbol 5, hermetic
<b>Operating temperature</b>	-54 °C to 121 °C [-65 °F to 250 °F]
<b>Actuators/levers</b>	integral lever
<b>Termination</b>	screw, leadwire
<b>Circuitry</b>	SPDT
<b>Contacts</b>	silver
<b>Amp rating</b>	1 A to 25 A
<b>Approvals</b>	UL, CSA, MIL-PRF-8805
<b>Measurements</b>	25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]
<b>Features</b>	hermetically sealed per MIL-S-8805; high temperature construction; reduced sensitivity to changes in altitude or pressure

# MICRO SWITCH™ Pushbutton Switches

## Lit and Unlit Pushbuttons

Lighted or unlighted, pushbuttons are designed to enhance manual operation with a flexible and attractive interface. Snap-in surface products are easy to apply, operate, and maintain. Potential applications include control boards and panels found in industrial machinery, instrumentation, flight decks, and test equipment.



Series	PB
Panel area	depends on type and number of snap-action switches
Display	8,1 mm [0.32 in] and other button sizes
Colored buttons	available
Mounting	threaded bushing
Termination	solder, H58, quick connect
Sealing	panel-seal version, hermetically sealed switch units
Electrical	2 A to 5 A, 125/250 Vac
Approvals	UL, CSA, some meet MIL-S-8805 and MIL-STD-1080D
Features	up to four poles; compact or miniature sizes; sealed versions available



Series	AML	MML
Panel area	20,5 mm [0.80 in] square; 20,5 mm x 30,5 mm [0.80 in x 1.20 in] rectangular	15 mm x 9,9 mm [0.59 in x 0.39 in] rectangular; 17,8 mm x 12,7 mm [0.70 in x 0.50 in] rectangular; 9,9 mm [0.39 in] square
Display	15,0 mm [0.59 in] square; 15 mm x 25 mm [0.59 in x 0.99 in] buttons	13 mm x 6,6 mm [0.51 in x 0.26 in] rectangular; 6,8 mm [0.27 in] square
Illumination	incandescent T-1-3/4 lamps – 6 V, 14 V, 28 V; LEDs – 2 V, 4 V, 5 V, 10 V, 15 V; neon lamps – 125 V, 250 V	T-1 – 5 V, 28 V; incandescent T-1-3/4 LEDs – 2 V, 2.5 V, 3 V
Behind panel	43,1 mm [1.7 in]	17,0 mm [0.67 in]
Mounting	snap-in individual, strip, matrix, sub-panel, pcb	snap-in individual, strip, sub-panel, pcb, bezel
Termination	solder, quick connect, pc board, push-on	solder, quick connect, printed wiring board
Sealing	optional panel seal	–
Electrical	solid state: 5 Vdc, 6 Vdc to 16 Vdc, 4.5 Vdc to 24 Vdc; electronic control: up to 3 A, 125 Vac	silver contacts: up to 1 A, 125 Vac; 6 A @ 125 Vac, 250 Vac; 2 A @ 30 Vdc; 1 A @ 125 Vdc; 1/10 hp @ 125 Vac; gold contacts: up to 0.25 A, 30 Vdc; UL rating 0.10 A
Approvals	UL, CSA, CDE, CE (selected products)	UL, CSA
Features	silver or gold contacts; full guard bezel option; lamp circuit independent of switch circuit	silver or gold contacts; pwb or panel-mount switches; multi-unit strip mounting available

# MICRO SWITCH™ Toggle & Rocker Switches

## Sealed and Standard Toggles and Rockers



Hermetic and environmentally sealed toggle switches offer enhanced reliability with MICRO SWITCH™ technology. Can be used in a variety of applications where a panel-mount switch with an environment-proof rating is needed, including industrial equipment, military and commercial aviation, agriculture, process control, and medical.



Series	AT	TS
<b>Type</b>	stainless steel toggle	stainless steel, phenolic toggle
<b>Sealing</b>	MIL-S-8805/26/98	–
<b>Operating temp.</b>	various	-54 °C to 71 °C [-65 °F to 160 °F]
<b>Actuator/lever</b>	standard, locking, tab, special design	standard
<b>Action</b>	2-position, momentary & maintained	2- or 3-position, momentary & maintained
<b>Mounting</b>	15/32 in bushing, 1/4 in bushing, 3-hole, above panel	15/32 in bushing
<b>Termination</b>	solder, solder T2, screw, quick connect, leadwire, H58	solder, screw, quick connect
<b>Circuitry</b>	SPDT, DPDT, DPNO, 3PDT, 4PDT, 6PDT, 7PDT, 8PDT, 10PDT	SPST, SPDT, DPST, DPDT
<b>Contacts</b>	silver, gold	silver cadmium oxide
<b>Amp rating</b>	0.01 A to 5 A (resistive)	up to 15 A
<b>Measurements</b>	various	various
<b>Approvals</b>	qualified to MIL-S-8805/26/98	UL, CSA, CE
<b>Features</b>	choice of sealed bushing; short behind panel depth	lever-to-bushing seal



Series	AML
<b>Housing type</b>	non-lighted, rectangle; 1 lamp circuit, rectangle; 2 lamp circuits, rectangle
<b>Circuitry</b>	SPST, SPDT, DPST, DPST, 4PDT
<b>Action</b>	2 position, 3 position
<b>Mounting</b>	snap-in panel
<b>Termination</b>	solder, quick connect, printed circuit, push-on
<b>Ampere/voltage range</b>	0.4 A to 2 A @ 0.5 Vdc to 30 Vdc; 0.4 A to 3 A @ 0.5 Vac to 125 Vac; 0.4 A to 2 A @ 0.5 Vac to 250 Vac
<b>Light (if applicable)</b>	no lamp installed; incandescent 6 V, 14 V, 28 V; neon
<b>LED/neon color</b>	red, yellow, green
<b>Measurements</b>	various
<b>Approvals</b>	–
<b>Features</b>	silver and gold contacts; available with or without diode protection for LEDs; lamp circuit independent of switch circuit



TW	ET	NT	TL
miniature stainless steel toggle	magnetically held toggle	industrial-grade toggle	military-grade toggle
qualified to MIL-S-83781	most listings qualified to MIL-S-5594	IP67/68; NEMA 3, 3R, 4 and 13	qualified to MIL-S-3950
-65 °C to 71 °C [-85 °F to 160 °F]	-65 °C to 71 °C [-85 °F to 160 °F]	-40 °C to 71 °C [-40 °F to 160 °F]	-65 °C to 71 °C [-85 °F to 160 °F]
standard, locking, special design, tab	standard, pull/push-to-unlock, tab	standard, locking, special design, tab	standard, special design, tab, paddle, none
2- or 3-position, momentary & maintained	2- or 3-position, momentary & maintained	2- or 3-position, momentary & maintained	2- or 3-position, momentary & maintained
bushing 15/32 in or 1/4 in	bushing 15/32 in	bushing 15/32 in	bushing 15/32 in
IWTS, solder, screw, quick connect, H58, T2	screw, leadwire, turret	solder, screw, quick connect	IWTS, solder, screw, quick connect, leadwire
SPST, SPDT, DPST, DPDT	SPDT, DPDT, 4PDT	SPST, SPDT, DPST, DPDT, 4PST, 4PDT	SPST, SPDT, DPST, DPDT 3PST, 3PDT, 4PST, 4PDT
silver alloy, gold-plated	silver alloy, gold-plated	silver alloy	silver alloy, gold-plated
0.1 A to 5.0 A @ 0.5 Vdc to 28 Vdc; 0.1 A to 5.0 A @ 0.5 Vac to 115 Vac	7 A max. (resistive)	up to 20 A (resistive)	up to 20 A (resistive)
49,78 mm H x 14,61 mm W x 14,61 mm D [1.96 in H x 0.575 in W x 0.575 in D]	51,56 mm H x 25,4 mm W x 25,4 mm D [2.03 in H x 1.0 in W x 1.0 in D]	26,7 mm H x 33,5 mm W x 22,6 mm D [1.05 in H x 1.32 in W x 0.89 in D]	26,7 mm H x 33,5 mm W x 22,6 mm D [1.05 in H x 1.32 in W x 0.89 in D]
UL, qualified to MIL-S-83781	qualified to MIL-S-5594	UL, CSA, CE	UL, CSA, CE, qualified to MIL-S-3950
saves space and weight; sealed bushing versions	holding coil replaces mechanical holding mechanisms to maintain toggle in operate	completely sealed switching chamber; enhanced tactile feedback	environment-proof sealing; qualified to MIL-DTL-3950



TP
non-lighted, rectangle
SPST, SPDT, DPDT, 4PDT
2 position, 3 position
flush mount; above panel mount
screw
silver, gold
-
-
various
UL recognized, CSA certified, CE approved
2- or 3-position operating action; various button colors; dust and splash-proof sealed; silver or gold contacts available; can be provided with or without buttons



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 switches:** Snap-action precision switches. Compact. Lightweight. Designed for repeatability and enhanced life. Premium and standard 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, contract 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**

## Honeywell Sensing and Control

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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.**

# Honeywell