Airflow, Force, and Pressure Sensors

Honeywell



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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Airflow Sensors



Contains advanced microstructure technology to provide a sensitive and fast response to flow, amount/direction of air or other gases. Potential applications include HVAC, gas metering, chromatography, vent hoods, and medical equipment.



Series	Honeywell Zephyr™ HAF	AWM1000	AWM2000	AWM3000
Signal conditioning	amplified, digital	unamplified, compensated	unamplified, compensated	amplified
Technology	silicon die with thermally isolated heater	silicon die	silicon die	silicon die
Flow/ pressure range	±50 SCCM to ±750 SCCM	±200 SCCM; 1000 SCCM to -600 SCCM; ±5,0 mbar [2.0 in $H_2$0]; ±10,0 mbar [4.0 in $H_2$0]	±30 SCCM; ±1000 SCCM; ±10,0 mbar [4.0 in $H_2$0]	30 SCCM; 200 SCCM; 1000 SCCM; 0 mbar to 1,25 mbar [0 in $H_2$0 to 0.5 in $H_2$0]; 0 mbar to 5,0 mbar [0 in $H_2$0 to 2 in $H_2$0]; 5,0 mbar [2.0 in $H_2$0]
Output	analog (Vdc), digital (I^2C)	analog	analog	analog
Power consumption	3.3 Vdc: 40 mW typ. (no load) (analog) 23 mW typ. (no load) (digital) 5.0 Vdc: 55 mW typ. (no load) (analog) 38 mW typ. (no load) (digital)	30 mW typ.	30 mW typ.	50 mW or 100 mW typ.
Port style	long port, short port	straight	straight	straight
Media compatibility	dry non-corrosive gases	dry gas only	dry gas only	dry gas only
Operating temperature range	-20 °C to 70 °C [-4 °F to 158 °F]	-25 °C to 85 °C [-13 °F to 185 °F]	-25 °C to 85 °C [-13 °F to 185 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
Measure-ments (H x W x D)	long port: 20 mm x 36 mm x 19,9 mm [0.79 in x 1.42 in x 0.78 in] short port: 17,6 mm x 28,8 mm x 19,9 mm [0.69 in x 1.13 in x 0.78 in]	12,7 mm x 54,4 mm x 31,5 mm [0.5 in x 2.14 in x 1.24 in]	12,7 mm x 54,4 mm x 31,5 mm [0.5 in x 2.14 in x 1.24 in]	12,7 mm x 54,4 mm x 31,5 mm [0.5 in x 2.14 in x 1.24 in]
Features	high accuracy; high sensitivity at very low flows; high stability; low pressure; linear output; customizable; full calibration and temperature compensation	sensitivity to low flows; enhanced response time; low power consumption; analog output; bidirectional sensing capability	sensitivity to low flows; enhanced response time; low power consumption; analog output; bidirectional sensing capability	sensitivity to low flows; fast response time; low power consumption; analog output; amplified

Airflow Sensors



Contains advanced microstructure technology to provide a sensitive and fast response to flow, amount/direction of air or other gases. Potential applications include HVAC, gas metering, chromatography, vent hoods, and medical equipment.





Series	AWM5000	AWM700
Signal conditioning	amplified	amplified
Technology	silicon die	silicon die
Flow/pressure range	0 SLPM to 5.0 SLPM; 0 SLPM to 10.0 SLPM; 0 SLPM to 15.0 SLPM; 0 SLPM to 20.0 SLPM	200 SLPM
Output	analog	analog
Power consumption	100 mW max.	60 mW max.
Port style	1/4 in-18 NPT	22 mm tapered
Media compatibility	dry gas only	dry gas only
Operating temperature range	-20 °C to 70 °C [-4 °F to 158 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
Measurements (H x W x D)	35,6 mm x 162,8 mm x 32,3 mm [1.40 in x 6.41 in x 1.27 in]	33,8 mm x 22,9 x 37,0 mm [1.33 in x 0.90 in 1.40 in]
Features	sensitivity to low flows; enhanced response time; low power consumption; analog output; laser trimmed	sensitivity to low flows; enhanced response time; low power consumption; analog output; highly stable





Series	AWM40000	AWM90000
Signal conditioning	unamplified (compensated) or amplified	uncompensated
Technology	silicon die	silicon die
Flow/pressure range	±25.0 SCCM; 1.0 SLPM; 6.0 SLPM	±200 SCCM; ±5,0 mbar [2.0 in H_20]
Output	analog	analog
Power consumption	60 mW max. or 75 mW max.	50 mW typ.
Port style	manifold	parallel
Media compatibility	dry gas only	dry gas only
Operating temperature range	-40 °C to 125 °C [-40 °F to 251 °F] (inclusive)	-25 °C to 85 °C [-13 °F to 185 °F]
Measurements (H x W x D)	12,7 mm x 30,5 mm x 30,2 mm [0.50 in x 1.2 in x 1.19 in]	13,08 mm x 30,48 mm x 27,94 mm [0.52 in x 1.2 in x 1.1 in]
Features	sensitivity to low flows; enhanced response time; low power consumption, analog output; laser trimmed	sensitivity to low flows; fast response time; low power consumption; analog output; bidirectional sensing capability

Force Sensors



Measures the addition or backup of force, meaning the resistance of silicon-implanted piezoresistors will increase when flexed under applied force. Potential applications include infusion pumps, anesthesia monitors, blood pressure equipment, and more.





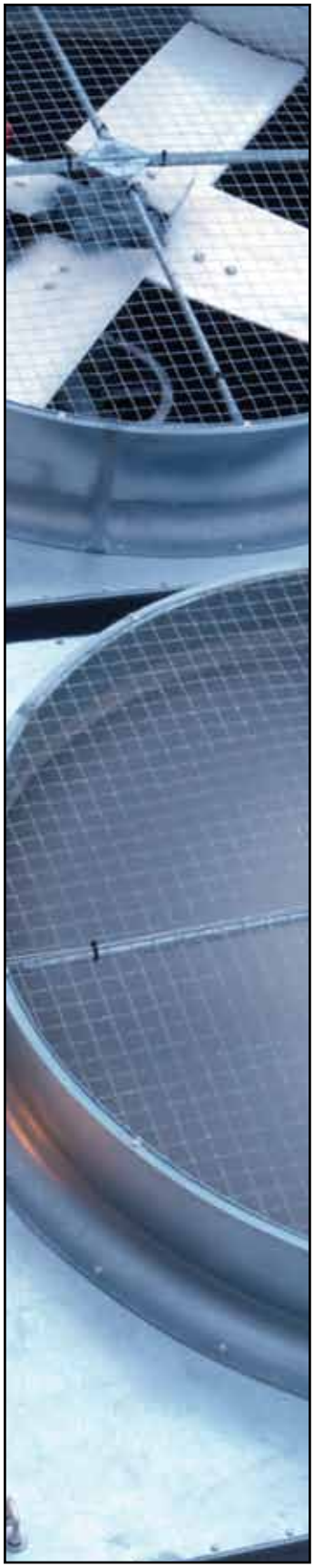
Series	1865	FS01/FS03
Signal conditioning	calibrated	amplified
Technology	silicon die (piezoresistive)	silicon die (piezoresistive)
Force range	0 psi to 5 psi, 0 psi to 10 psi, 0 psi to 15 psi, 0 psi to 25 psi, 0 psi to 30 psi	0 lb to 1.5 lb, 0 lb to 3.0 lb
Overforce	10 psi, 30 psi, 45 psi, 60 psi	7 lb
Linearity	0.10 % FS typ., BFSL; 0.25 % FS max., BFSL	1.0 % FS typ., BFSL; 3.0 % FS max., BFSL
Operating temperature range	-28 °C to 54 °C [-18 °F to 129 °F]	0 °C to 70 °C [32 °F to 158 °F]
Storage temperature range	-1 °C to 54 °C [30 °F to 129 °F]	5 °C to 50 °C [41 °F to 122 °F]
Measurements (H x W x D)	7,62 mm x 17,145 mm x 17,145 mm [0.30 in x 0.675 in x 0.675 in]	8,26 mm x 17,27 mm x 25,1 mm [0.325 in x 0.68 in x 0.988 in]
Features	pressure measurement for liquid media; 8-pin DIP electrical connection; laser trimmed	high-level output range; calibrated zero and span





Series	FSG	FSS
Signal conditioning	unamplified	unamplified
Technology	silicon die (piezoresistive)	silicon die (piezoresistive)
Force range	0 N to 14,7 N [0 g to 1500 g]	0 N to 14,7 N [0 g to 1500 g]
Overforce	54 N [5500 g]	44 N [4500 g]
Linearity	0.5 % span typ., BFSL	±1.5 % span, BFSL
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Storage temperature range	-55 °C to 105 °C [-67 °F to 221 °F]	-40 °C to 100 °C [-40 °F to 212 °F]
Measurements (H x W x D)	9,0 mm x 12,7 mm x 18,2 mm [0.35 in x 0.50 in x 0.71 in]	3,25 mm x 9,14 mm x 3,81 mm [0.13 in x 0.36 in x 0.15 in]
Features	precision force sensing; ratiometric output; available signal conditioning	precision force sensing; ratiometric output; adaptable product design

Board Mount Pressure Sensors
Ultra Low Pressure (<1 psi)



Sensing element design consists of four piezoresistors galvanized with a thin, chemically etched silicon diaphragm that produces a proportional electrical output. Potential applications include dialysis equipment, HVAC devices, data storage, industrial machinery, and more.





Series	TruStability® HSC	TruStability® SSC
Signal conditioning	amplified	unamplified
Pressure range	±2.5 mbar to ±40 mbar [±1 inH_2O to ±30 inH_2O]	±2.5 mbar to ±40 mbar [±1 inH_2O to ±30 inH_2O]
Device type	differential, gage	differential, gage
Output	analog (Vdc), digital (I^2C or SPI)	analog (Vdc), digital (I^2C or SPI)
Calibrated	yes	yes
Temperature comp.	yes	yes
Total error band	±1 %FSS to ±3 %FSS depending on pressure range	±2 %FSS to ±5 %FSS depending on pressure range
Accuracy	±0.25 %FSS BFSL	±0.25 %FSS BFSL
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT
Operating temperature range	0 °C to 50 °C [32 °F to 122 °F] (compensated)	-20 °C to 85 °C [-4 °F to 185 °F] (compensated)
Measurements (H x W x D)	varies by package style	varies by package style
Approvals	RoHS, WEEE	RoHS, WEEE
Features	Industry-leading long-term stability, total error band, accuracy and flexibility; high burst pressures and working pressure ranges; excellent repeatability	Industry-leading long-term stability, total error band, accuracy and flexibility; high burst pressures and working pressure ranges; excellent repeatability





Series	XPCL	XPXL
Signal conditioning	unamplified	unamplified
Pressure range	4 inH_2O to 10in H_2O	4 inH_2O to 10 inH_2O
Device type	differential, gage	differential, gage
Output	mV	mV
Calibrated	yes	no
Temperature comp.	yes	no
Total error band	-	-
Accuracy	linearity & hysteresis: 0.5 % typ.	linearity & hysteresis: 0.5 % typ.
Mounting options	SIP	SIP
Operating temperature range	0 °C to 70 °C [32 °F to 158 °F] (compensated)	-25 °C to 85 °C [-13 °F to 185 °F]
Measurements (H x W x D)	20,0 mm x 15,2 mm x 5,3 mm [0.8 in x 0.6 in x 0.21 in]	20,0 mm x 15,2 mm x 5,3 mm [0.8 in x 0.6 in x 0.21 in]
Approvals	RoHS, WEEE	RoHS, WEEE
Features	small size; constant voltage excitation; high impedance; low current	small size; constant voltage excitation; high impedance; low current





ASDX	DCXL-DS
amplified	unamplified
±5 in H_2O; ±10 in H_2O	±1 inH_2O to ±10 inH_2O
absolute, differential, bidirectional gage	differential
analog (Vdc), digital (I^2C or SPI)	mV
yes	yes
yes	yes
±2.0 %FSS max.	-
-	linearity & hysteresis: 0.2 % typ.
DIP	SIP
0 °C to 85 °C [32 °F to 185 °F] (compensated)	0 °C to 50 °C [32 °F to 122 °F]
16,6 mm x 13,9 mm x 16,6 mm [0.67 in x 0.55 in x 0.67 in]	27,43 mm x 27,94 mm x 13,21 mm [1.06 in x 1.1 in x 0.52 in]
RoHS, WEEE	RoHS, WEEE
ASIC-enhanced output; analog output with 12-bit resolution or 14-bit digital output; enhanced response time and accuracy	improved stress isolation; reduced output offset errors





CPCL	CPXL
unamplified	unamplified
4 inH_2O, 10 inH_2O	4 inH_2O, 10 inH_2O
absolute, differential, gage	absolute, differential, gage
mV	mV
yes	no
yes	no
-	-
linearity & hysteresis: 0.5 % typ.	linearity & hysteresis: 0.5 % typ.
SIP	SIP
0 °C to 70 °C [32 °F to 158 °F] (comp.)	-25 °C to 85 °C [-13 °F to 185 °F]
20,1 mm x 9,9 mm x 25,4 mm [0.79 in x 0.39 in x 1.0 in]	20,1 mm x 9,9 mm x 25,4 mm [0.79 in x 0.39 in x 1.0 in]
RoHS, WEEE	RoHS, WEEE
small size; constant voltage excitement; high impedance, low current; tube arrangements with nylon housings	

Board Mount Pressure Sensors
Ultra Low Pressure (<1 psi)



Sensing element design consists of four piezoresistors galvanized with a thin, chemically etched silicon diaphragm that produces a proportional electrical output. Potential applications include dialysis equipment, HVAC devices, data storage, industrial machinery, and more.





Series	XCXL	SCXL
Signal cond.	unamplified	unamplified
Pressure range	±4 inH_2O to ±10 inH_2O	4 inH_2O to 10 inH_2O
Device type	differential	differential, gage
Output	mV	mV
Calibrated	yes	yes
Temp comp.	yes	yes
Total error band	-	-
Accuracy	linearity & hysteresis: 0.5 % typ.	linearity & hysteresis: 0.2 % typ.
Mounting	SIP	SIP
Operating temp.	0 °C to 70 °C [32 °F to 158 °F] (comp.)	0 °C to 50 °C [32 °F to 122 °F] (comp.)
Measure. (H x W x D)	27,43 mm x 27,94 mm x 13,21 mm [1.08 in x 1.1 in x 0.52 in]	27,43 mm x 27,94 mm x 13,21 mm [1.08 in x 1.1 in x 0.52 in]
Approvals	RoHS, WEEE	RoHS, WEEE
Features	stress-isolated package; ratiometric output	small size; low noise; high impedance, low current



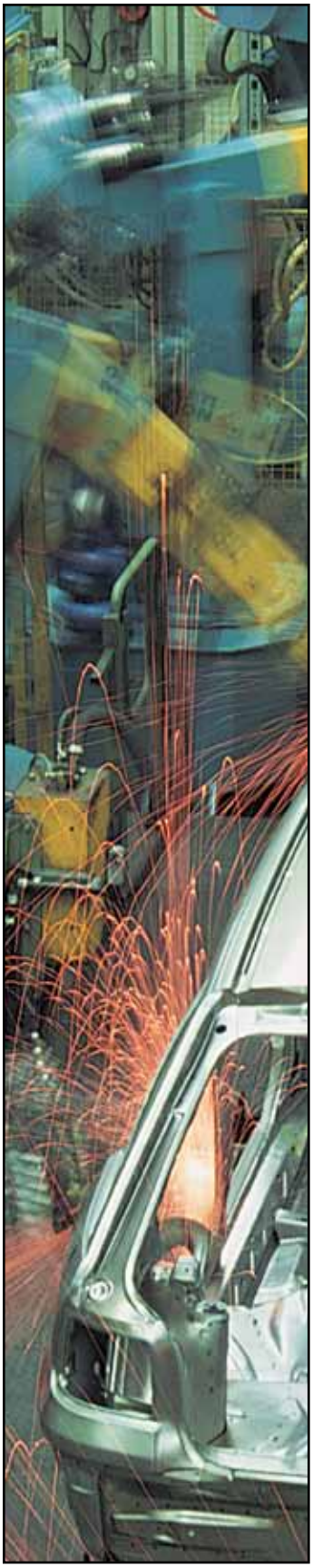




SDX005IND4/SDX010IND4	SXL	DUXL
unamplified	unamplified	unamplified
±5 inH_2O to ±10 inH_2O	±10 inH_2O	1 inH_2O to 30 inH_2O
differential, gage	differential, gage	differential, gage
mV	mV	mV
yes	no	yes
yes	no	yes
-	-	-
linearity & hysteresis: 0.2 % typ.	linearity & hysteresis: 0.2 % typ.	linearity & hysteresis: 0.5 % typ.
DIP	DIP	SIP
0 °C to 50 °C [32 °F to 122 °F] (comp.)	0 °C to 50 °C [32 °F to 122 °F]	-25 °C to 85 °C [-13 °F to 185 °F] (comp.)
9,4 mm x 13,97 mm x 11,94 mm [0.37 in x 0.55 in x 0.47 in]	9,4 mm x 13,97 mm x 11,94 mm [0.37 in x 0.55 in x 0.47 in]	7,11 mm x 12,7 mm x 30,48 mm [0.28 in x 0.5 in x 1.20 in]
RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
solvent-resistant case; low noise; high impedance, low current	enhanced accuracy, low pressure readings; high impedance bridge	low profile; small size; ratiometric output

Board Mount Pressure Sensors

Low (1 psi to 15 psi) to Mid (15 psi to 250 psi) and Low



Utilizes a specialized piezoresistive micro-machined sensing element which allows part interchangeability, and enhanced performance, reliability, and accuracy. Potential applications include medical, HVAC, data storage, industrial machinery, pumps, and robotics.





Series	24PC	26PC
Signal conditioning	unamplified	unamplified
Pressure range	0.5 psi to 250 psi (SIP, DIP) 1 psi to 15 psi (SMT)	1 psi to 250 psi (SIP, DIP) 1 psi to 15 psi (SMT)
Device type	absolute, differential, wet-wet differential, gage, vacuum gage	differential, wet-wet differential, gage, vacuum gage
Output	mV	mV
Calibrated	no	yes
Temperature comp.	no	yes
Accuracy	linearity & hysteresis: 0.5 % typ.	linearity & hysteresis: 0.5 % typ.
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT
Operating temp.	-40 °C to 85 °C [-40 °F to 185 °F]	0 °C to 50 °C [32 °F to 122 °F] (comp.)
Measurements (H x W x D)	SIP, DIP: 27,94 mm x 12,7 mm x 16,0 mm [1.10 in x 0.5 in x 0.63 in] SMT: 7,87 mm x 10,41 mm x 10,92 mm [0.31 in x 0.41 in x 0.43 in]	SIP, DIP: 27,94 mm x 12,7 mm x 16,0 mm [1.10 in x 0.5 in x 0.63 in] SMT: 7,87 mm x 10,41 mm x 10,92 mm [0.31 in x 0.41 in x 0.43 in]
Approvals	RoHS, WEEE	RoHS, WEEE
Features	SIP, DIP: true wet/wet differential sensing; miniature package; operable after exposure to frozen conditions; choice of termination for gage sensors SMT: true wet/wet differential sensing; pick-up feature; maximum peak reflow temperature of 260° [500 °F]; end-point calibration; elastomeric construction	SIP, DIP: true wet/wet differential sensing; miniature package; operable after exposure to frozen conditions; choice of termination for gage sensors SMT: true wet/wet differential sensing; pick-up feature; maximum reflow temperature of 260° [500 °F]; end-point calibration; elastomeric construction

Features a sensing technology that utilizes a specialized piezoresistive micro-machined sensing element. Potential uses include measuring vacuum or positive pressure in medical and environmental applications.



Series	24PC Flow-Through
Signal conditioning	unamplified
Pressure range	15 psi to 30 psi
Device type	flow-through gage
Output	mV
Calibrated	no
Temperature comp.	no
Accuracy	linearity & hysteresis: 0.75 % typ.
Mounting options	SIP
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]
Measurements (H x W x D)	8,89 mm x 25,65 mm x 12,7 mm [0.35 in x 1.01 in x 0.50 in]
Approvals	RoHS, WEEE
Features	miniature package; media flow-through port; operable after exposure to frozen conditions; choice of termi

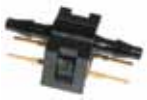
Pressure Flow-Through (1 psi to 100 psi)







CPC	ASDX	SDX
unamplified	amplified	unamplified
1 psi to 150 psi	1 psi to 100 psi	1 psi to 100 psi
absolute, differential, gage	absolute, differential, gage, bidirectional	absolute, differential, gage
mV	analog (Vdc), digital (I^2C or SPI)	mV
yes	yes	yes
yes	yes	yes
linearity & hysteresis: 0.5 % typ.	total error band: ±2.0 %FSS max.	linearity & hysteresis: 0.25 % typ.
SIP	DIP	DIP
0 °C to 70 °C [32 °F to 158 °F] (comp.)	0 °C to 85 °C [32 °F to 185 °F] (comp.)	0 °C to 50 °C [32 °F to 122 °F] (comp.)
20,1 mm x 9,9 mm x 25,4 mm [0.79 in x 0.39 in x 1.0 in]	16,6 mm x 13,9 mm x 16,6 mm [0.67 in x 0.55 in x 0.67 in]	16,6 mm x 13,9 mm x 16,6 mm [0.67 in x 0.55 in x 0.67 in]
RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
small size; constant voltage excitement; high impedance, low current	ASIC-enhanced output; analog or 12-bit digital output	small size; low noise; high impedance; corrosion resistant; available in two grades



26PC Flow-Through
unamplified
1 psi to 100 psi
flow-through gage
mV
yes
yes
linearity & hysteresis: 0.35 % typ.
SIP
0 °C to 50 °C [32 °F to 122 °F] (compensated)
8,89 mm x 25,65 mm x 12,7 mm [0.35 in x 1.01 in x 0.50 in]
RoHS, WEEE

nation for gage sensors

Board Mount Pressure Sensors
Low (1 psi to 15 psi) to Mid (15 psi to 250 psi)



Utilizes a specialized piezoresistive micro-machined sensing element which allows part interchangeability, and enhanced performance, reliability, and accuracy. Potential applications include medical, HVAC, data storage, industrial machinery, pumps, and robotics.







Series	TruStability® HSC	TruStability® SSC	TruStability® NSC
Signal conditioning	amplified	amplified	unamplified
Pressure range	60 mbar to 10 bar [1 psi to 150 psi]	60 mbar to 10 bar [1 psi to 150 psi]	60 mbar to 10 bar [1 psi to 150 psi]
Device type	absolute, differential, gage	absolute, differential, gage	absolute, differential, gage
Output	analog (Vdc); digital (I^2C or SPI)	analog (Vdc); digital (I^2C or SPI)	mV
Calibrated	yes	yes	no
Temperature comp.	yes	yes	no
Total error band	±1 %FSS	±2 %FSS	–
Accuracy	±0.25 %FSS BFSL	±0.25 %FSS BFSL	±0.25 %FSS BFSL
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT	DIP, SIP, SMT
Operating temp.	0 °C to 50 °C [-32 °F to 122 °F] (compensated)	-20 °C to 85 °C [-4 °F to 185 °F] (compensated)	-40 °C to 85 °C [-40 °F to 185 °F] (uncompensated)
Measurements (H x W x D)	varies by package style	varies by package style	varies by package style
Approvals	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
Features	industry-leading long-term stability; liquid media option extends performance to non-corrosive, non-ionic liquids	industry-leading long-term stability; liquid media option extends performance to non-corrosive, non-ionic liquids	industry-leading long-term stability; allows customers the flexibility of sensor self-calibration; liquid media option

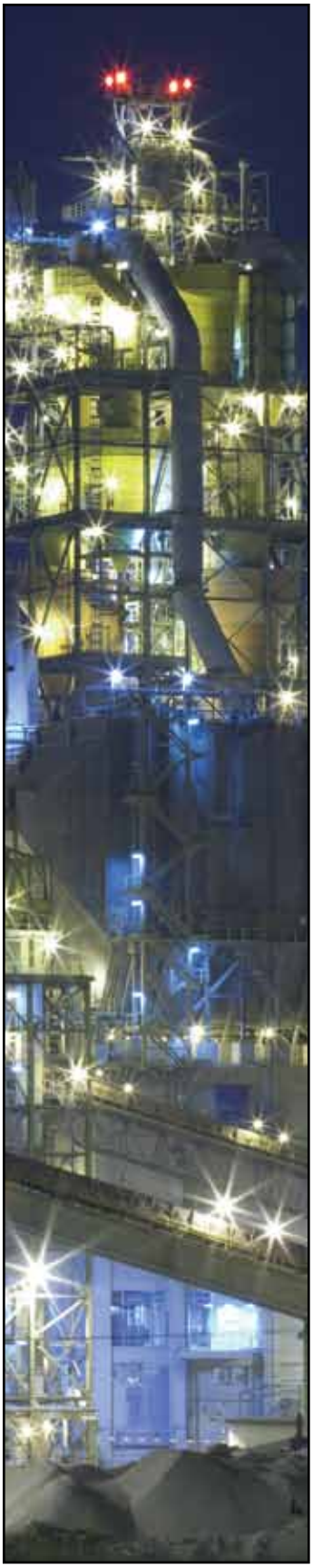






Basic NBP	SCC	SX	SCX	XPC
unamplified	unamplified	unamplified	unamplified	unamplified
1 bar to 10 bar [15 psi to 150 psi]	1 psi to 150 psi	1 psi to 150 psi	1 psi to 150 psi	1 psi to 150 psi
absolute, gage	absolute, differential, gage	absolute, differential, gage	absolute, differential, gage	absolute, differential, gage
mV	mV	mV	mV	mV
no	no	no	yes	yes
no	yes	no	yes	yes
–	–	–	–	–
±0.25 %FSS BFSL	linearity, hysteresis & repeatability: 0.2 % typ.	linearity, hysteresis & repeatability: 0.2 % typ.	linearity & hysteresis: 0.3 % typ.	linearity & hysteresis: 1.0 % typ.
DIP, leadless SMT, SMT	SMT	SMT	SIP	SIP
-40 °C to 125 °C [-40 °F to 257 °F] (uncompensated)	0 °C to 50 °C [32 °F to 122 °F] (compensated)	-40 °C to 125 °C [-40 °F to 257 °F]	0 °C to 70 °C [32 °F to 158 °F] (compensated)	0 °C to 70 °C [32 °F to 158 °F] (compensated)
as small as 7 mm x 7 mm x 3,84 mm [0.276 in x 0.276 in x 0.151 in]	7,6 mm x 7,6 mm x 8,7 mm [0.3 in x 0.3 in x 0.34 in]	7,6 mm x 7,6 mm x 8,7 mm [0.3 in x 0.3 in x 0.34 in]	26,3 mm x 27,9 mm x 27,4 mm [1.03 in x 1.10 in x 1.08 in]	20,0 mm x 15,2 mm x 5,3 mm [0.8 in x 0.6 in x 0.21 in]
–	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
cost-effective; Honeywell brand; small size, durable, flexible, robust	high impedance bridge; low power consumption; lidded or ported versions	high impedance bridge; low power consumption; lidded or ported versions	small size; low noise; enhanced accuracy; high impedance; corrosion resistant	small size; constant voltage excitation; high impedance; low current

Pressure Sensors and Transducers
Heavy Duty



Honeywell Sensing and Control (S&C) offers decades of experience in the heavy duty pressure products industry. That's why, industry-wide, our heavy duty pressure sensors and transducers are known for enhanced quality, reliability, and service – which adds up to outstanding value for your applications.





Series	13mm	19mm
Pressure connection	weld ring with back support, 1/8-27 NPT, 1/4-18 NPT, 7/16 UNF	weld ring with body O-ring, flush mount, flush mount with flange, 1/8-27 NPT, 1/4-18 NPT, 7/16 UNF, 1/4 BSPP, Euro O-ring, 1/4 VCR (female nut)
Measurement type	absolute, sealed gage	absolute, gage, vacuum gage
Construction	wetted parts 316L SS	wetted parts 316L SS
Pressure range	0 psi to 500 psi through 0 psi to 5000 psi	0 psi to 3 psi through 0 psi to 500 psi
Output	0 mV to 100 mV (nominal)	0 mV to 100 mV (nominal)
Accuracy	±0.25 %BFSL max.	±0.25 %BFSL max.
Total Error Band		
Amplified	no	no
Compensated temperature range	0 °C to 82 °C [32 °F to 180 °F]	0 °C to 82 °C [32 °F to 180 °F]
Termination	ribbon cable	ribbon cable
Measurements (H x W x D)	varies by body type	varies by body type
Approvals	–	–
Features	isolated stainless steel package; voltage or current supply options; accommodates media that will not adversely affect 316SS	isolated stainless steel package; vacuum compatible; accommodates media that will not adversely affect 316SS

Heavy Duty Pressure Sensors *are small, allowing them to be used on their own in tight packages or as the building block for a complete transducer. The 13 mm Series and the 19 mm Series were developed for potential use in pressure applications that involve measurement of hostile media in harsh environments compatible with 316 stainless steel, a type of steel that increases corrosion resistance, improves resistance to pitting from chloride ion solutions, and provides increased strength at high temperatures. Potential applications include industrial and hydraulic controls, tank pressure, pressure transmitters, and process control systems.*

Heavy Duty Pressure Transducers *are complete amplified and compensated pressure measurement solutions. With a choice of ports, connectors, outputs and pressure ranges, the PX2 Series, MLH Series and SPT Series transducers can be configured to meet the needs of the application. They are engineered to be resistant to a wide variety of media for use in most harsh environments. Potential applications include air compressors, general system and factory automation, pump, valve, and fluid pressure, and transportation (heavy equipment and alternative fuel vehicles) system pneumatics and hydraulics.*







PX2	MLH	SPT
NPT 1/4-18, NPT 1/8-27, 9/16-18 UNF SAE J1926-3, 7/16-20 UNF SAE J1926-3, 1/4 45° Flare Female Schrader, M12 X 1.5 ISO 6149-3, G1/4 ISO 1179-3, G1/8 ISO 1179-3	1/4-18 NPT; M12 x 1.5 (ISO 6149); M14 x 1.5 (ISO 6149); 3/8-24 UNF (SAE-3 O-ring boss); M18 x 1.5 (ISO 6149); 1/8 in-27 NPT; 1/2 in-20 UNF (SAE-5 O-ring boss); M10 x 1 (ISO 6149); 1/4 in SAE female Schrader (7/16-20 UNF-2B internal thread); 7/16-20 UNF (SAE-4 O-ring boss); 1/2 in NPT; 9/16-18 UNF (SAE-6 O-ring boss); R 1/4-19 BSPT (ISO 7-1 tapered thread); G 1/4-19 (DIN 3852-2); G 1/8 with O-ring groove; M16 x 1.5 (ISO 6149); G 1/4 with O-ring groove; G 1/8 (DIN 3852-2); R 1/8-28 BSPT (ISO 7-1 tapered thread); M20 x 1.5 (ISO 6149); 1/2-20 (SAE J514)	1/8-27 NPT, 1/4-18 NPT, 7/16-20 UNF, 1/4-19 BSPP, 1/4 VCR gland
absolute, sealed gage	gage, sealed gage	absolute, gage, sealed gage, vacuum gage pressures
port and housing: 304 stainless steel; connector: PBT 30% GF	port: 304L stainless steel; diaphragm: Haynes 214 alloy	wetted parts 316L SS
7 bar to 34 bar [100 psi to 500 psi]	0 psi to 50 psi through 0 psi to 8000 psi	0 psi to 3 psi through 0 psi to 5000 psi
ratiometric: 5.0 V, 10 %Vs to 90 %Vs; 5.0 V, 5 %Vs to 95 %Vs; 3.3 V, 10 %Vs to 90 %Vs; 3.3 V, 5 %Vs to 95 %Vs regulated: 1 Vdc to 6 Vdc, 0.25 Vdc to 10.25 Vdc, 0.5 Vdc to 4.5 Vdc, 1 Vdc to 5 Vdc	ratiometric (from 5 Vdc excitation): 0.5 Vdc to 4.5 Vdc; regulated: 1 Vdc to 6 Vdc, 0.25 Vdc to 10.25 Vdc, 0.5 Vdc to 4.5 Vdc, 1 Vdc to 5 Vdc; current: 4 mA to 20 mA	4 mA to 20 mA, 0 mV to 100 mV, 1 Vdc to 5 Vdc
±0.25 %FSS	±0.25 %FSS (±0.5 %FSS on ranges below 100 psi)	±0.25 %BFSL max.
±2 %FSS at -40 °C to 125 °C [-40 °F to 257 °F]	±2 %FSS to ±15 %FSS, depending on temp range and termination type	–
yes	yes	yes, amplified and unamplified
-40 °C to 125 °C [-40 °F to 257 °F]	ratiometric output: -40 °C to 125 °C [-40 °F to 257 °F] regulated and 4 mA to 20 mA outputs: -40 °C to 125 °C [-40 °F to 257 °F] (See product literature for operating and temperature compensated area graphics.)	-10 °C to 85 °C [14 °F to 185 °F]
Packard Metripak 150	Delphi Metripak 150; Hirschmann (mates with G4W1F); M12 x 1 (Brad Harrison micro); DIN 43650-C, 8 mm-male; Amp Superseal 1.5; cable (1 m); cable (3 m); flying leads (20 AWG – 6 in); Deutsch DTM04-3P (integral)	bayonet connector, cable
66 mm x 21,5 mm dia. [2.60 in x 0.84 in dia.]	27,0 mm x 27,0 mm x 55 mm [1.06 in x 1.06 in x 2.18 in]	22,2 mm x 22,2 mm x length varies [0.875 in x 0.875 in x length varies]
IP65 or IP69K, depending on connector	UL component recognition for USA/Canada: file no. E258956	–
designed for configurability; cost-effective; application expertise; global support; industry-leading Total Error Band; durable; designed to Six Sigma standards; broad compensated temperature range; good EMC protection	all-metal wetted parts; no internal elastomeric seals; stable and creep-free; input reverse voltage protection; less than 2 ms response time; easy customization; exceeds CE heavy industrial EMC for use in areas of high RFI/EMI	calibrated and temperature compensated; NEMA 4 design; rugged 316 stainless steel wetted parts



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, board mount 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, board mount and stainless steel media isolated pressure sensors, force sensors, safety light curtains, push-pull switches, and MICRO SWITCH™ basic 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. Analog or digital output. 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 ±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 ICs, magnetoresistive position 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: The **SMART position sensor** measures linear or angular position of a magnet attached to a moving object so that the object's position can be determined or controlled. Its simple, non-contact design eliminates mechanical failure mechanisms, reduces wear and tear, improves reliability and durability. **May be used in**: valve position, material handling, plastic molding, passenger bus level position, truck-mounted crane outrigger position, aerial work lift platform, front loader and digger/excavation boom position. **Potentiometer sensors** measure linear, rotary position or displacement. Honeywell's proprietary conductive plastic delivers extensive temperature range and infinite resolution, and provides precision position measurement. **May be used in**: robotic motion control, marine steering, and in-tank level sensing. **Ultrasonic sensors** measure time delays between emitted and echo pulses, often accurately determining the sensor-to-target distance. **May be used in**: level measurement, height and thickness sensing, and diameter control.



Pressure sensors – board mount: 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, and transmissions.



Pressure sensors – heavy duty: Small, allowing use on their own in tight packages or as the building block for a complete transducer. Developed for potential use in pressure applications that involve measurement of hostile media in harsh environments compatible with 316 stainless steel. **May be used in** industrial controls, process control systems, and industrial automation.



Pressure transducers – heavy duty: Provide a complete amplified and compensated pressure measurement solution. Choice of ports, connectors, outputs and pressure ranges, engineered to be resistant to a wide variety of media for use in most harsh environments. **May be used in:** Industrial HVAC/R and air compressors; general system and factory automation pump, valve and fluid pressure; and transportation (heavy equipment and alternative fuel vehicles) system, pneumatics, and hydraulics.



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/hatch monitoring.



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



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.

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.



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. 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.

WIRELESS SWITCHES



Limitless™ Series: Combines the best of MICRO SWITCH™ limit switches with latest commercial wireless technology. Beneficial for remote monitoring where wiring/maintenance is not physically possible or economically feasible. Used for position sensing and presence/absence detection. **May be used in:** valve position, crane boom/jib/skew position, lifts, material handling, presses, construction/ag machines, conveyors, remote/temporary equipment, grain diverters or flaps, and door position.

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 acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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

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

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
1985 Douglas Drive North
Golden Valley, MN 55422
www.honeywell.com

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