



**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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# Temperature Sensors

## Discrete RTD Sensors



Silicon-based thin film RTDs laser trimmed for accuracy and interchangeability. Offer stable, fast linear outputs. Accurate and interchangeable without recalibration. Potential applications include HVAC, electronic assemblies, and process control.



Series	HEL-705/707/711/712/716/717	HEL-775
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C
<b>Temperature sensing range</b>	TFE teflon: -70 °C to 260 °C [-94 °F to 500 °F] fiberglass: -75 °C to 500 °C [-100 °F to 932 °F]	-55 °C to 150 °C [-67 °F to 302 °F]
<b>Packaging type</b>	alumina tube	ceramic case
<b>Termination</b>	28 ga. or 24 ga. lead wire	SIP
<b>Base resistance &amp; interchangeability</b>	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C
<b>Self-heating</b>	< 15 mW/°C for 0.85 O.D. typ.	< 6.8 mW/°C typ.; 9.7 mW/°C typ.
<b>Termination material</b>	24 ga. nickel-coated, stranded copper; 28 ga. nickel-coated, stranded copper	phosphor bronze with tin silver plating
<b>Features</b>	teflon or fiberglass lead wires; wide temperature range; ceramic case material; multiple sizes	enhanced stability; thin film platinum; ceramic SIP; solderable leads



Series	HEL-777/776	700
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C
<b>Temperature sensing range</b>	-55 °C to 150 °C [-67 °F to 302 °F]	-70 °C to 500 °C [-94 °F to 932 °F] leaded: -50 °C to 130 °C [-58 °F to 266 °F]
<b>Packaging type</b>	molded plastic	radial chip or surface mount axial flip chip
<b>Termination</b>	SIP	lead wires or solderpads
<b>Base resistance &amp; interchangeability</b>	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C	100 Ohm: Class A; 100 Ohm: Class B 1000 Ohm: Class A; 1000 Ohm: Class B 1000 Ohm: Class 2B
<b>Self-heating</b>	< 15 mW/°C typ.	0,4 K/mW, 0,6 K/mW, or 0,8 K/mW at 0 °C [32 °F]
<b>Termination material</b>	copper alloy 194 solder dipped with Sn/Ag	Pt-Clad Ni wire and end termination galvanic tin-plated with Ni barrier layer
<b>Features</b>	enhanced stability; thin film platinum; molded plastic SIP package; solderable leads	interchangeability; SMD and chip package versions; enhanced stability and time response

# Temperature Sensors

## Discrete and Packaged RTD Sensors



Silicon-based thin film RTDs laser trimmed for accuracy and interchangeability. Offer stable, fast linear outputs. Accurate and interchangeable. Potential applications include HVAC, electronics assemblies, semiconductors, and process control.



Series	HRTS	TD
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	2000 Ohm silicon resistive element
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	–
<b>Temperature sensing range</b>	-70 °C to 260 °C [-94 °F to 500 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
<b>Packaging type</b>	ceramic case	plastic or threaded aluminum case
<b>Termination</b>	lead wires	SIP or lead wires
<b>Base resistance &amp; interchangeability</b>	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C	R2000 Ohm ±5 Ohm at 20 °C
<b>Self-heating</b>	< 0.3 mW/°C typ.	–
<b>Termination material</b>	28 ga. nickel-coated, stranded copper, teflon insulated	TD4A: solderable leads available TD5A: insulated
<b>Features</b>	resistance interchangeable; accurate; fast; laser-trimmed; wide temperature range	interchangeable without recalibration; thin film; laser trimmed; air or liquid temperature sensing

# Temperature Sensors

## Packaged Temperature Probes

Compact, lightweight. Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. Variety of custom packages available for air, liquid, and solid temperature sensing applications.



Series	R300	500
<b>Temp. sensing type</b>	immersion	air/gas, immersion, surface, and liquid level
<b>Thermistor type</b>	RTD	NTC
<b>Nominal resistance at 25 °C [77 °F]</b>	100 Ohm	200 Ohm to 1,000,000 Ohm (inclusive)
<b>Operating temperature range</b>	-40 °C to 275 °C [-40 °F to 572 °F] continuous, excursion to 300 °C [572 °F] for 10 minutes max.	-40 °C to 300 °C [-40 °F to 572 °F] (inclusive)
<b>Housing material</b>	stainless steel	plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing
<b>Electrical and mechanical interface</b>	overmolded connector with M14 x 1.50 thread	wide variety of connectors, lead types, materials, and insulation
<b>Features</b>	enhanced response, reliability, and accuracy; stainless steel construction	wide selection of housing, resistance, and termination options

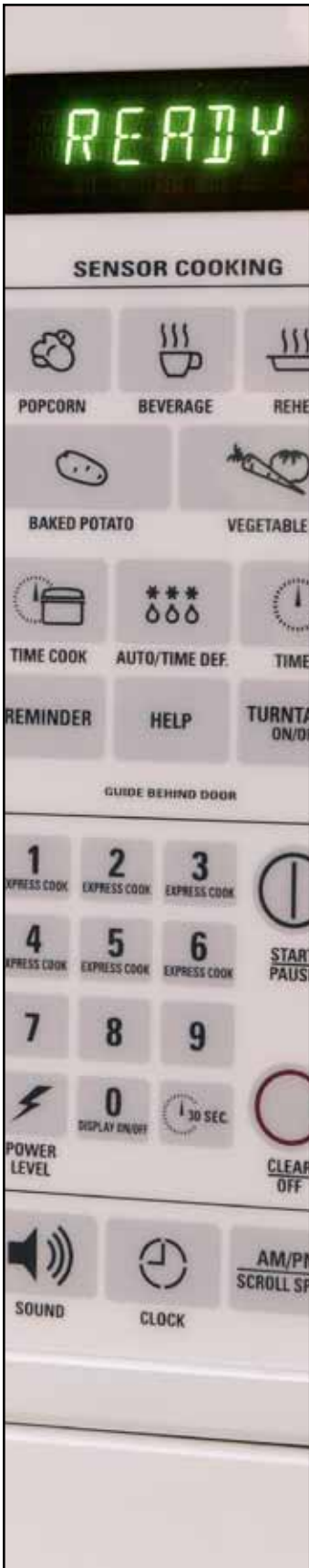


Series	ES110	ES120	6655
<b>Temp. sensing type</b>	air/gas	immersion	air/surface
<b>Thermistor type</b>	NTC	NTC or KTY	NTC
<b>Nominal resistance at 25 °C [77 °F]</b>	2000 Ohm	2000 Ohm	10,000 Ohm, 12,000 Ohm
<b>Operating temperature range</b>	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]	-20 °C to 110 °C [-4 °F to 230 °F]
<b>Housing material</b>	brass	brass	phenolic
<b>Electrical and mechanical interface</b>	overmolded connector with M10 x 1.25 or M12 x 1.50 thread	overmolded connector with M10 x 1.25, M10 x 1.0, M12 x 1.5, M14 x 1.50 thread, or 1/8 PTF	quick connect terminal: (90°, 0.25 in), (0°, 0.25 in), (45°, 0.25 in), (90°, 0.1875 in)
<b>Features</b>	exposed thermistor; rugged design; brass encapsulation	enclosed thermistor; rugged design; brass encapsulation	low, compact profile; tight interchangeability; enhanced accuracy and response time



# Temperature Sensors

## Discrete Thermistors



Change resistance with change in temperature. Available in wide range of resistance values. Variety of packages and sizes from leaded devices to surface mount versions. Potential applications include military, aerospace, appliances, medical, and instrumentation test equipment.



Series	111	112	115
<b>Description</b>	small, hermetically sealed glass bead	large, hermetically sealed glass bead	E-I tested and matched beads on header assembly
<b>Operating temperature range</b>	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]
<b>Dissipation constant in still air</b>	0.1 mW/°C	0.4 mW/°C	varies with assembly type
<b>Time constant in air</b>	0.5 s	4.0 s	0.5 s
<b>Nominal resistance at 25 °C [77 °F]</b>	1,000 Ohm, 2,000 Ohm, 8,000 Ohm, 10,000 Ohm, 100,000 Ohm	200 Ohm, 500 Ohm, 1,000 Ohm, 2,000 Ohm, 5,000 Ohm, 10,000 Ohm, 50,000 Ohm, 100,000 Ohm, 500,000 Ohm, 2,000,000 Ohm	2,000 Ohm, 8,000 Ohm
<b>Maximum diameter</b>	0,36 mm [0.014 in]	1,14 mm [0.045 in]	0,36 mm [0.014 in]
<b>Termination material</b>	platinum iridium	platinum iridium	glass to metal header
<b>Lead length</b>	9,6 mm [0.375 in]	9,6 mm [0.375 in]	31,75 mm [1.25 in]
<b>Features</b>	enhanced response time and long-term stability; hermetically sealed in glass; micro size; welded platinum iridium leads	enhanced response time; hermetically sealed in glass; small size; meets MIL-T-23648; enhanced long-term stability	E-I matched in air or helium; interchangeable pairs; extended life; compression-type glass hermetic seal; high pressure solder seal



Series	140/142	143	173
<b>Description</b>	disc	disc	EIA 0805 surface mount, end-banded
<b>Operating temperature range</b>	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 125 °C [-76 °F to 257 °F]
<b>Dissipation constant in still air</b>	3.0 mW/°C, 4.0 mW/°C	5 mW/°C to 7 mW/°C	3.5 mW/°C
<b>Time constant in air</b>	10.0 s	16.0 s to 20.0 s	10.0 s
<b>Nominal resistance at 25 °C [77 °F]</b>	500 Ohm, 1,000 Ohm, 3,000 Ohm, 5,000 Ohm, 8,000 Ohm, 10,000 Ohm, 25,000 Ohm, 100,000 Ohm	100 Ohm, 200 Ohm, 1,000 Ohm, 3,000 Ohm, 5,000 Ohm, 30,000 Ohm	500 Ohm, 5,000 Ohm, 10,000 Ohm, 22,000 Ohm, 33,000 Ohm, 47,000 Ohm, 50,000 Ohm, 100,000 Ohm
<b>Maximum diameter</b>	3,81 mm [0.15 in]	6,35 mm [0.25 in]	EIA 0805 SMD
<b>Termination material</b>	tinned copper	tinned copper	solder plated Ni barrier
<b>Lead length</b>	38,1 mm [1.50 in]	38,1 mm [1.50 in]	—
<b>Features</b>	pc-board mountable; rugged design; versatile; solderable leads	rugged design; pc-board mountable; solderable leads	surface mount; tape and reel; glass-coated ceramic; 0805 EIA package



120	121	126	128	129	135
mini glass probe	standard glass probe	matched large glass bead	matched mini glass probe	matched large glass probe	glass encapsulated chip, DO-35 type
-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]
0.7 mW/°C, 1.0 mW/°C	1.0 mW/°C	0.8 mW/°C	2.1 mW/°C	3.0 mW/°C	2.5 mW/°C
10.0 s	22.0 s	4.0 s	10.0 s	22.0 s	4.0 s
1,000 Ohm, 2,000 Ohm, 10,000 Ohm	2,000 Ohm, 5,000 Ohm, 10,000 Ohm, 50,000 Ohm, 100,000 Ohm, 1,000,000 Ohm	2,000 Ohm, 100,000 Ohm	2,000 Ohm, 15,000 Ohm	2,000 Ohm, 4,000 Ohm	1,000 Ohm, 2,000 Ohm, 5,000 Ohm, 10,000 Ohm, 20,000 Ohm, 25,000 Ohm, 30,000 Ohm, 47,000 Ohm, 50,000 Ohm, 100,000 Ohm, 200,000 Ohm, 230,000 Ohm, 500,000 Ohm, 1,000,000 Ohm, 5,000,000 Ohm
1,5 mm [0.060 in]	2,54 mm [0.10 in]	2,54 mm [0.10 in]	3,05 mm [0.120 in]	5,08 mm [0.20 in]	2,0 mm [0.080 in]
dumet	dumet	platinum iridium	dumet	dumet	tinned copper-clad steel
31,8 mm [1.25 in]	50,8 mm [2.00 in]	9,6 mm [0.375 in]	31,8 mm [1.25 in]	50,8 mm [2.00 in]	28,6 mm [1.125 in]
hermetically sealed in glass; enhanced reliability and stability; weldable/solder- able dumet leads	hermetically sealed in glass; enhanced reliability and stability; weldable/solder- able dumet leads	hermetically sealed in glass; interchangeability; enhanced sensitivity and reliability; small size	hermetically sealed in glass; interchangeability; enhanced sensitivity and reliability; miniature size	interchangeability; enhanced sensitivity, reliability, and stability; miniature size	enhanced temperature capability; uniform dimensions; tape and reel



175	192	194	197	ICL
EIA 1206 surface mount, end- banded	uni-curve with bare leads and epoxy	uni-curve with insulated leads and epoxy	chip with bare leads and epoxy	in-rush current limiter
-60 °C to 125 °C [-76 °F to 257 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 125 °C [-76 °F to 257 °F]	-40 °C to 185 °C [-40 °F to 365 °F]
3.5 mW/°C	0.75 mW/°C	0.75 mW/°C	0.75 mW/°C	12.7 mW/°C to 23 mW/°C
10.0 s	15.0 s	15.0 s	15.0 s	32 s to 93 s
5,000 Ohm, 10,000 Ohm, 50,000 Ohm, 100,000 Ohm, 440,000 Ohm	500 Ohm, 1,000 Ohm, 2,252 Ohm, 3,000 Ohm, 5,000 Ohm, 10,000 Ohm, 30,000 Ohm, 50,000 Ohm, 100,000 Ohm	2,252 Ohm, 3,000 Ohm, 5,000 Ohm, 10,000 Ohm, 30,000 Ohm, 100,000 Ohm, 50,000 Ohm	300 Ohm, 1,000 Ohm, 3,000 Ohm, 5,000 Ohm, 10,000 Ohm, 50,000 Ohm, 100,000 Ohm	0.5 Ohm to 220 Ohm ±20 %
EIA 1206 SMD	2,413 mm [0.095 in]	2,413 mm [0.095 in]	2,413 mm [0.095 in]	9.5 mm [0.374 in] to 32 mm [1.26 in]
solder plated Ni barrier	tinned copper, alloy 180	solid nickel, Teflon® insulated	tinned copper, alloy 180	tinned copper
–	38,1 mm [1.50 in]	38,1 mm [1.50 in]	38,1 mm [1.50 in]	[25,4 mm] 1 in min.
surface mount; tape and reel; glass-coated ceramic; 1206 EIA package	resistance temperature curve inter- changeability; enhanced stability and life; epoxy coated	resistance temperature curve inter- changeability; enhanced stability and life; epoxy coated; teflon-coated leads	rapid response times; epoxy coated	enhanced reliability; special high- temp protective coating; rugged design; pc-board mountable

# Thermostats

## Precision Thermostats



Hermetic/non-hermetic devices available. Enhanced reliability versions meet stringent requirements of military and aerospace industries for dielectric strength, moisture, resistance, vibration, and shock. Potential applications include computers, medical electronics, power supplies, industrial controls, test equipment, and aerospace.



Series	3000 Custom Packaged	3100 Hermetic	3100U UL-approved Hermetic
<b>Description</b>	custom packaged	hermetic	UL-approved hermetic
<b>Amperage</b>	dependent on the internal device	2.0 A/1.0 A/5.0 A	3.0 A resistive max.
<b>Housing material</b>	stainless steel or brass	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
<b>Operating temperature range</b>	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 260 °C [-20 °F to 500 °F]
<b>Environmental exposure range</b>	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 288 °C [-80 °F to 550 °F]
<b>Dielectric strength</b>	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case
<b>Insulation resistance</b>	MIL-STD-202, Method 302; 50 MOhm min. terminal to case	MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied
<b>Contact resistance</b>	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm max.
<b>Hermetic seal</b>	MIL-STD-202, Method 112; Cond. A, 1 x 10 <sup>-5</sup> atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup> atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup> atm cc/s
<b>Moisture resistance</b>	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
<b>Shock</b>	-	-	-
<b>Vibration</b>	-	-	-
<b>Thermal shock</b>	-	-	-
<b>Salt spray</b>	-	-	-
<b>Acceleration</b>	-	-	-
<b>Approvals</b>	-	-	UL/CSA
<b>Features</b>	custom packaging; hermetically sealed; tight tolerances and differentials; hermetic connector or potted construction	hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts



<b>3106 Low-level Hermetic</b>	<b>3150 Low Silhouette Hermetic</b>	<b>3153 Low Silhouette Hermetic</b>	<b>3156 Low-level Silhouette Hermetic</b>	<b>3200 Aerospace</b>
low-level hermetic	low silhouette hermetic	low silhouette hermetic	low level, silhouette hermetic	aerospace
100 mA/500 mA	2.0 A/1.0 A	2.0 A resistive	100 mA/500 mA	5.0 A resistive
steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
-29 °C to 204 °C [-20 °F to 400 °F]	-29 °C to 177 °C [-20 °F to 350 °F]	-29 °C to 177 °C [-20 °F to 350 °F]	-29 °C to 204 °C [-20 °F to 400 °F]	-51 °C to 163 °C [-60 °F to 325 °F]
-62 °C to 260 °C [-80 °F to 500 °F]	-54 °C to 260 °C [-65 °F to 500 °F]	-65 °C to 260 °C [-85 °F to 500 °F]	-62 °C to 260 °C [-80 °F to 500 °F]	-65 °C to 177 °C [-85 °F to 350 °F]
MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 750 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac
MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; 500 MOhm	MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; 500 MOhm
MIL-STD-202, Method 307; 0.025 Ohm	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm max.	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.025 Ohm max.
MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup> atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup> atm cc/s	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>	MIL-STD-202, Method 112; Cond. C
MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
-	-	MIL-STD-202, Method 213; 100 G	-	MIL-STD-202, Method 213; 750 G
-	-	MIL-STD-202, Method 204; 20 G	-	MIL-STD-202, Method 204; 30 G; MIL-STD-202, Method 214; 50 G
-	-	MIL-STD-202, Method 107; Cond. B	-	MIL-STD-202, Method 107; Cond. B
-	-	MIL-STD-202, Method 101; Cond. B	-	MIL-STD-202, Method 101; Cond. B
-	-	-	-	MIL-STD-202, Method 212; 20 G
-	-	MIL-S-24236	-	MIL-S-24236/NASA S-311-641/01
gold-alloy contacts; hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	gold-alloy contacts; hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	NASA certified; space qualified; hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts

# Thermostats

## Commercial Thermostats

Automatic or manual reset options. Phenolic or ceramic housings. Wide variety of mounting brackets and terminals. Potential applications include HVAC, computers, aerospace, medical equipment, appliances, automotive, office automation, fireplaces, and water heaters.



Series	2450A	2450CM	2450CMG
<b>Use</b>	heat detection	high current	low voltage
<b>Reset type</b>	automatic	manual	manual
<b>Housing material</b>	phenolic, epoxy seal cap and terminals	ceramic	ceramic
<b>Functional property</b>	open or close on rise	open on rise	open on rise
<b>Amperage</b>	3 A	15 A/10 A	0.5 A
<b>Operating temperature range</b>	47 °C to 107 °C [117 °F to 225 °F]	52 °C to 232 °C [125 °F to 450 °F]	52 °C to 232 °C [125 °F to 450 °F]
<b>Environmental exposure range</b>	0 °C to 150 °C [32 °F to 302 °F]	10 °C to 260 °C [50 °F to 500 °F]	10 °C to 260 °C [50 °F to 500 °F]
<b>Contacts</b>	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
<b>Approvals</b>	UL	UL, CSA, VDE	UL, CSA, VDE
<b>Features</b>	gold-alloy contacts; epoxy-sealed cap and terminals	rivet sleeve construction	gold-alloy contacts; rivet sleeve construction



Series	2450RG	2455R	2455RA
<b>Use</b>	low voltage	high current	heat detection
<b>Reset type</b>	automatic	automatic	automatic
<b>Housing material</b>	phenolic	phenolic	phenolic, epoxy seal cap and terminals
<b>Functional property</b>	open or close on rise	open or close on rise	close on rise
<b>Amperage</b>	0.5 A	15 A/10 A	3 A
<b>Operating temperature range</b>	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	47 °C to 107 °C [117 °F to 225 °F]
<b>Environmental exposure range</b>	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	0 °C to 150 °C [32 °F to 302 °F]
<b>Contacts</b>	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
<b>Approvals</b>	UL, CSA	UL, CSA, VDE	UL
<b>Features</b>	gold-alloy contacts; rivet sleeve construction	rivet sleeve construction; high profile and current	gold-alloy contacts; epoxy-sealed cap



<b>2450HR</b>	<b>2450HRG</b>	<b>2450R</b>	<b>2450RC</b>	<b>2450RCG</b>
high current	low current	high current	high current	low voltage
automatic	automatic	automatic	automatic	automatic
phenolic	phenolic	phenolic	ceramic	ceramic
open or close on rise	open on rise	open or close on rise	open or close on rise	open or close on rise
15 A/10 A	0.5 A	15 A/10 A	15 A/10 A	0.5 A
0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 260 °C [32 °F to 500 °F]
-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-20 °C to 287 °C [0 °F to 550 °F]	-20 °C to 287 °C [0 °F to 550 °F]
silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy	silver/nickel alloy	WE-1 gold alloy cross point
UL, CSA	UL, CSA	UL, CSA	UL, CSA, VDE	UL, CSA, VDE
rivet sleeve construction; factory calibrated	gold-alloy contacts; rivet sleeve construction; factory calibrated	rivet sleeve construction; low profile	rivet sleeve construction; low profile	gold-alloy contacts; rivet sleeve construction; low profile



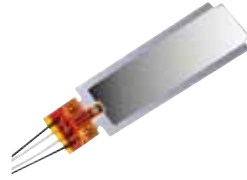
<b>2455RVB</b>	<b>2455RC</b>	<b>2455RG</b>	<b>2455RM</b>
high current	high current	low voltage	high current
automatic	automatic	automatic	manual
ceramic, epoxy overmold	ceramic	phenolic	phenolic
open or close on rise	open on rise	open or close on rise	open on rise
15 A/10 A	15 A/10 A	0.5 A	15 A/10 A
-12 °C to 105 °C [10 °F to 250 °F]	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F] (inclusive)
-18 °C to 121 °C [0 °F to 250 °F]	-20 °C to 287 °C [0 °F to 550 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 260 °C [0 °F to 500 °F]
silver/nickel alloy	silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy
UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE
epoxy overmolded; rivet-sleeve construction; dust-free housing; factory calibrated	rivet sleeve construction; high profile	gold-alloy contacts; rivet sleeve construction; high profile; factory calibrated	rivet sleeve construction; factory calibrated

# Heaters

## Flexible Heaters



Flat, molded-to-shape, spiral wrap, transparent, composite, and high temperature configurations with single, multiple, and variable watt densities to customize heat output to unique applications. Potential applications include medical, food service, outdoor cameras, valves, and appliances.



<b>Series</b>	<b>78000</b>
<b>Description</b>	transparent
<b>Maximum power</b>	0.8 W/cm <sup>2</sup> [5 W/in <sup>2</sup> ]
<b>Operating/storage temperature range</b>	-40 °C to 85 °C [-40 °F to 185 °F]
<b>Size constraints</b>	0,60 m x 0,43 m [22 in x 17 in]
<b>Geometry</b>	specific to customer requirements within size constraints
<b>Heater trace pattern</b>	continuous layer of ITO (Indium Tin Oxide) across entire surface
<b>Construction</b>	very thin layer of ITO electrically sputtered on PET polyester film; electrical connection made via silver ink or carbon bus bars laid on top of the ITO; wire connections are made via ring terminals eyeleted to the silver or carbon bus bars or flexible tail/connector
<b>Standard wire</b>	<ul style="list-style-type: none"> <li>• UL 1180 Teflon®</li> <li>• gauge per customer request</li> <li>• otherwise selected for max. heater current draw</li> </ul>
<b>PSA</b>	yes
<b>Approvals</b>	–
<b>Features</b>	no wires in clear view area; optical grade, thin film polyester; low power consumption



3400	3100	3200
Kapton® insulated or Kapton® insulated high temperature	silicon wire-wound	silicon chemically etched
6.2 W/cm <sup>2</sup> [40 W/in <sup>2</sup> ]	6.2 W/cm <sup>2</sup> [40 W/in <sup>2</sup> ]	6.2 W/cm <sup>2</sup> [40 W/in <sup>2</sup> ]
Kapton® insulated: 177 °C [350 °F] max. Kapton® insulated high temperature: 260 °C [500 °F] max.	250 °C [482 °F] max. 200 °C [392 °F] max. (UL)	250 °C [482 °F] max. 200 °C [392 °F] max. (UL)
0,61 m x 0,61 m [24 in x 24 in]	none, virtually any size and shape	0,61 m x 0,61 m [24 in x 24 in]
specific to customer requirements within size constraints	specific to customer requirements	specific to customer requirements within size constraints
specific to customer requirements	specific to customer requirements	specific to customer requirements
contain etched, resistive foil encased between two layers of Kapton®; Kapton® insulated uses acrylic, thermoset bonding adhesive; Kapton® insulated high temperature uses Teflon® bonding adhesive	contains resistive wire encased between two layers of fiberglass-supported silicone rubber; all bonding adhesives are uncured silicone rubber; cured under pressure and temperature during manufacturing	contains resistive foil traces encased between two layers of fiberglass-supported silicone rubber bonded together using temperature and pressure; heater trace patterns generated similar to processes used in pc-board design and manufacture
<ul style="list-style-type: none"> <li>• UL 1180 Teflon®</li> <li>• gauge per customer request</li> <li>• otherwise selected for max. heater current draw</li> </ul>	<ul style="list-style-type: none"> <li>• UL 1180 Teflon®</li> <li>• gauge per customer request</li> <li>• otherwise selected for max. heater current draw</li> </ul>	<ul style="list-style-type: none"> <li>• UL 1180 Teflon®</li> <li>• gauge per customer request</li> <li>• otherwise selected for max. heater current draw</li> </ul>
yes	yes	yes
UL, CSA	UL, CSA, TUV	UL, CSA, TUV
low out gassing; variety of geometries; high dielectric strength with minimal thickness	virtually any size or shape; multi-strand resistance wires	multiple watt densities or varying trace geometries; flat, molded-to-shape, spiral wrap

# Humidity Sensors

## Humidity



Configured with integrated circuitry to provide on-chip signal conditioning. Potential applications include refrigeration, drying, meteorology, battery-powered systems, OEM assemblies, HVAC, office automation, and medical.



Series	HIH-4000	HIH-4010/4020/4021
<b>Description</b>	integrated circuit	covered or uncovered, filtered or unfiltered integrated circuit
<b>Output</b>	analog voltage	analog voltage
<b>Package type</b>	SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)	SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)
<b>Response time</b>	5 s 1/e in slow moving air	5 s 1/e in slow moving air
<b>Operating temperature range</b>	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
<b>Operating humidity range</b>	0 % RH to 100 % RH	0 % RH to 100 % RH
<b>Moisture/dust filter</b>	no	yes (some listings)
<b>Cover/case</b>	no	yes (some listings)
<b>Calibration and data print out</b>	yes (some listings)	yes (some listings)
<b>Accuracy</b>	±3.5 % RH	±3.5 % RH
<b>Voltage supply</b>	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc
<b>Features</b>	voltage output; near linear voltage output vs. % RH; laser trimmed; molded thermoset plastic housing; chemically resistant	voltage output; near linear voltage output vs. % RH; laser trimmed; molded thermoset plastic housing; chemically resistant



HIH-4030/4031	HIH-4602-L	HIH-4602-A, C	HIH-5030/5031	HCH-1000
covered, filtered or unfiltered integrated circuit	covered integrated circuit	monolithic IC with integral thermistor or precision RTD	covered, filtered or unfiltered integrated circuit	cased or uncased capacitive polymer
analog voltage	analog voltage	analog voltage (for humidity), resistance (for temperature)	analog voltage	capacitance value
surface mount	TO-5 can	TO-5 can	surface mount	SIP (2,54 mm [0.100 in] lead pitch)
5 s 1/e in slow moving air	30 s 1/e in slow moving air	50 s 1/e in slow moving air	5 s 1/e in slow moving air	15 s at 30 % RH to 90 % RH
-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 120 °C [-40 °F to 248 °F]
0 % RH to 100 % RH	0 % RH to 100 % RH	0 % RH to 100 % RH	0 % RH to 100 % RH	0 % RH to 100 % RH
yes (some listings)	no	yes (some listings)	yes (some listings)	no
yes	yes	yes	yes	yes (some listings)
yes (some listings)	yes (some listings)	yes (some listings)	no	no
±3.5 % RH	±3.5 % RH	±3.5 % RH	±3 % RH	–
4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	2.7 Vdc to 5.5 Vdc	–
surface mount package; voltage output; near linear voltage output vs. % RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	linear voltage output vs % RH; laser-trimmed interchangeability; chemically resistant; enhanced accuracy, fast response	humidity and temperature sensing in one package; near linear voltage output vs. % RH; laser trimmed; chemically resistant; built-in static protection	surface mount package; voltage output; near linear voltage output vs. % RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	capacitance output; polyimide sensing material; glass wafer substrate; low hysteresis; long-term stability



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 IC, magnetoresistive position IC, 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:** Semiconductor 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, 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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www.honeywell.com

### **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