Thermal 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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Temperature Sensors
Packaged Temperature Probes

Compact, lightweight, with easy installation. Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. Wide variety of custom packages available for air, liquid, and solid temperature sensing applications. Potential applications include transportation, compressors, HVAC/R, automation control, and aviation.

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

Series	ES110	ES120	6655
Temp. sensing type	air/gas	immersion	air/surface
Thermistor type	NTC	NTC or KTY	NTC
Nominal resistance at 25 °C [77 °F]	2000 Ohm	2000 Ohm	10,000 Ohm, 12,000 Ohm
Operating temperature range	-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]
Housing material	brass	brass	phenolic
Electrical and mechanical interface	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)
Features	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 RTD Sensors

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

Series	HEL-705/707/711/712/716/717	HEL-775
Sensor type	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
Temperature coefficient	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C
Temperature sensing range	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]
Packaging type	alumina tube	ceramic case
Termination	28 ga. or 24 ga. lead wire	SIP
Base resistance & interchangeability	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
Self-heating	< 15 mW/°C for 0.85 O.D. typ.	< 6.8 mW/°C typ.; 9.7 mW/°C typ.
Termination material	24 ga. nickel-coated, stranded copper; 28 ga. nickel-coated, stranded copper	phosphor bronze with tin silver plating
Features	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
Sensor type	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
Temperature coefficient	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C
Temperature sensing range	-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]
Packaging type	molded plastic	radial chip or surface mount axial flip chip
Termination	SIP	lead wires or solderpads
Base resistance & interchangeability	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
Self-heating	< 15 mW/°C typ.	0,4 K/mW, 0,6 K/mW, or 0,8 K/mW at 0 °C [32 °F]
Termination material	copper alloy 194 solder dipped with Sn/Ag	Pt-Clad Ni wire and end termination galvanic tin-plated with Ni barrier layer
Features	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 with a wide temperature range. Accurate and interchangeable. Potential applications include HVAC, electronics assemblies, semiconductors, and process control.

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

Temperature Sensors
Discrete Thermistors

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

Series	111	112	115
Description	small, hermetically sealed glass bead	large, hermetically sealed glass bead	E-I tested and matched beads on header assembly
Operating temperature range	-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]
Dissipation constant in still air	0.1 mW/°C	0.4 mW/°C	varies with assembly type
Time constant in air	0.5 s	4.0 s	0.5 s
Nominal resistance at 25 °C [77 °F]	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
Maximum diameter	0,36 mm [0.014 in]	1,14 mm [0.045 in]	0,36 mm [0.014 in]
Termination material	platinum iridium	platinum iridium	glass to metal header
Lead length	9,6 mm [0.375 in]	9,6 mm [0.375 in]	31,75 mm [1.25 in]
Features	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; 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
Description	disc	disc	EIA 0805 surface mount, end-banded
Operating temperature range	-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]
Dissipation constant in still air	3.0 mW/°C, 4.0 mW/°C	5 mW/°C to 7 mW/°C	3.5 mW/°C
Time constant in air	10.0 s	16.0 s to 20.0 s	10.0 s
Nominal resistance at 25 °C [77 °F]	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
Maximum diameter	3,81 mm [0.15 in]	6,35 mm [0.25 in]	EIA 0805 SMD
Termination material	tinned copper	tinned copper	solder plated NI barrier
Lead length	38,1 mm [1.50 in]	38,1 mm [1.50 in]	–
Features	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/solderable dumet leads	hermetically sealed in glass; enhanced reliability and stability; weldable/solderable 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 interchangeability; enhanced stability and life; epoxy coated	resistance temperature curve interchangeability; 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

* On a 2252 and 3000 Ohm part, diameter can be up to 3,05 mm [0.120 in] max.

Thermostats
Precision Thermostats

Provides either temperature control or over-temperature protection. Hermetic/non-hermetic devices available. Custom packaged for application flexibility and designed to operate in extreme environmental conditions. Potential applications include computers, medical electronics, power supplies, industrial controls, test equipment, and aerospace.

Series	3000 Custom Packaged	3100 Hermetic	3100U REDI TEMP
Description	custom packaged	hermetic	UL-approved hermetic
Amperage	dependent on the internal device	2.0 A/1.0 A/5.0 A	3.0 A resistive max.
Housing material	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
Operating temperature range	-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]
Environmental exposure range	-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]
Dielectric strength	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
Insulation resistance	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
Contact resistance	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.
Hermetic seal	MIL-STD-202, Method 112; Cond. A, 1 x 10^{-5} atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10^{-5} atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10^{-5} atm cc/s
Moisture resistance	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
Shock	–	–	–
Vibration	–	–	–
Thermal shock	–	–	–
Salt spray	–	–	–
Acceleration	–	–	–
Approvals	–	–	UL/CSA
Features	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

3106 Low-level Hermetic	3150 Low Silhouette Hermetic	3156 Low-level Silhouette Hermetic	3001/3004 Series Non-Hermetic
low-level hermetic	low silhouette hermetic	low level, silhouette hermetic	low profile silhouette
100 mA/500 mA	2.0 A/1.0 A	100 mA/500 mA	1 A to 3 A (3001, 3001U Series)* 2 A to 4 A (3004 Series)*
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	phenolic base with metal closure
-29 °C to 204 °C [-20 °F to 400 °F]	-29 °C to 177 °C [-20 °F to 350 °F]	-29 °C to 204 °C [-20 °F to 400 °F]	-18 °C to 168 ° C [0 °F to 335 °F]
-62 °C to 260 °C [-80 °F to 500 °F]	-54 °C to 260 °C [-65 °F to 500 °F]	-62 °C to 260 °C [-80 °F to 500 °F]	-18 °C to 177 ° C [0 °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; 1500 Vac 60 Hz terminal to case (2000 Vac 3004)
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; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; Cond. B 500 MΩ, 500 Vdc applied
MIL-STD-202, Method 307; 0.025 Ohm	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 50 mΩ
MIL-STD-202, Method 112; Cond. 1 x 10^{-5} atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10^{-5} atm cc/s	MIL-STD-202, Method 112; Cond. 1 x 10-5	–
MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	UL/CSA
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	gold-alloy contacts; hermetically sealed; tight tolerances and differentials; pre-set and tamper proof; SPST contacts	tight tolerances and differentials; low profile; available to open or close on temperature rise; dust-proof phenolic base; SPST contacts

Thermostats
High Reliability Thermostats

Provides either temperature control or over-temperature protection. Hermetic/non-hermetic devices available. Manufactured to meet stringent requirements of military and aerospace industries for dielectric strength, moisture, resistance, vibration, and shock. Many potential applications in aerospace and defense applications.

Series	3200 Aerospace	3153 Low Silhouette Hermetic
Description	aerospace	low silhouette hermetic
Amperage	5.0 A resistive	2.0 A resistive
Housing material	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
Operating temperature range	-51 °C to 163 °C [-60 °F to 325 °F]	-29 °C to 177 °C [-20 °F to 350 °F]
Environmental exposure range	-65 °C to 177 °C [-85 °F to 350 °F]	-65 °C to 260 °C [-85 °F to 500 °F]
Dielectric strength	MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case
Insulation resistance	MIL-STD-202, Method 302; 500 MOhm	MIL-STD-202, Method 302; 500 MOhm
Contact resistance	MIL-STD-202, Method 307; 0.025 Ohm max.	MIL-STD-202, Method 307; 0.050 Ohm max.
Hermetic seal	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. C
Moisture resistance	MIL-STD-202, Method 106	MIL-STD-202, Method 106
Shock	MIL-STD-202, Method 213; 750 G	MIL-STD-202, Method 213; 100 G
Vibration	MIL-STD-202, Method 204; 30 G; MIL-STD-202, Method 214; 50 G	MIL-STD-202, Method 204; 20 G
Thermal shock	MIL-STD-202, Method 107; Cond. B	MIL-STD-202, Method 107; Cond. B
Salt spray	MIL-STD-202, Method 101; Cond. B	MIL-STD-202, Method 101; Cond. B
Acceleration	MIL-STD-202, Method 212; 20 G	–
Approvals	MIL-S-24236/NASA S-311-641/01	MIL-S-24236
Features	NASA certified; space qualified; 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

** based on 240 Vac and life-cycle dependent. Call for further details.*

3MS1 QPL	3500	3800 Industrial-Grade	3600/3601 Custom-Packaged
military	military	severe-duty applications	PCB mountable TO-5
5 A resistive	5 A resistive	7 A resistive	1 A resistive
steel housing with glass-to-metal seal at terminal junction	steel housing with glass-to-metal seal at terminal junction	steel housing with glass-to-metal seal at terminal junction	nickel
-46 °C to 190 °C [-50 °F to 375 °F]	-51 °C to 204 °C [-60 °F to 400 °F]	-29 °C to 260 °C [-20 °F to 500 °F]	40° C to 120 °C [104 °F to 248 °F]
-65 °C to 260 °C [-85 °F to 500 °F]	-65 °C to 260 °C [-85 °F to 500 °F]	-62 °C to 260 °C [-80 °F to 500 °F]	-50 °C to 150 °C [-58 °F to 302 °F]
MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac 60 Hz terminal to case	500 Vac 60 Hz for one second, terminal to case
MIL-STD-202, Method 302; 500 MΩ	MIL-STD-202, Method 302; 500 MΩ	MIL-STD-202, Method 302, Cond. B; 50 MΩ min. terminal to case	20 mΩ at 500 Vdc
MIL-STD-202, Method 307; 0.050 Ω max.	MIL-STD-202, Method 307; 0.050 Ω max.	MIL-STD-202, Method 307; 50 mΩ max.	60 mΩ
MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. A $1x10^{-5}$ atm cc/s	$1x10^{-3}$ atm cc/s
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; 400 G	MIL-STD-202, Method 213; 400 G	–
MIL-STD-202, Method 204; 20 G	MIL-STD-202, Method 204; 20 G	MIL-STD-202, Method 204; 20 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-STD-202, Method 212; 20 G	–	–
qualified to MIL-S-24236; QPL listed	meets or exceeds the requirements of MIL-S- 24236	–	–
each unit is 100% thermally and mechanically inspected; available to open or close on temperature rise; calibrations preset at factory; SPST contacts	tight tolerances and differentials; hermetically sealed; designed specifically for military and commercial aircraft; each unit is 100% thermally and mechanically inspected	easily customized; used where high levels of vibration and mechanical shock are common	gold contacts; available to open or close on temperature rise; specifically designed for PCBs; flexible circuitry; sophisticated time-based circuits; wave solderable

Thermostats
Commercial Thermostats

Provides either temperature control or over-temperature protection. Automatic or manual reset options. Phenolic or ceramic housings. Potential applications include HVAC, computers, medical equipment, appliances, automotive, office automation, fireplaces, and water heaters.

Series	2450A	2450CM	2450CMG
Use	heat detection	high current	low voltage
Reset type	automatic	manual	manual
Housing material	phenolic, epoxy seal cap and terminals	ceramic	ceramic
Functional property	open or close on rise	open on rise	open on rise
Amperage	3 A	15 A/10 A	0.5 A
Operating temperature range	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]
Environmental exposure range	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]
Contacts	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
Approvals	UL	UL, CSA, VDE	UL, CSA, VDE
Features	gold-alloy contacts; epoxy-sealed cap and terminals	rivet sleeve construction	gold-alloy contacts; rivet sleeve construction

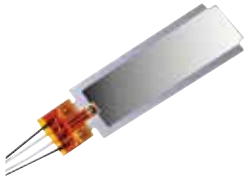
Series	2450RG	2455R	2455RA
Use	low voltage	high current	heat detection
Reset type	automatic	automatic	automatic
Housing material	phenolic	phenolic	phenolic, epoxy seal cap and terminals
Functional property	open or close on rise	open or close on rise	close on rise
Amperage	0.5 A	15 A/10 A	3 A
Operating temperature range	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]
Environmental exposure range	-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]
Contacts	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
Approvals	UL, CSA	UL, CSA, VDE	UL
Features	gold-alloy contacts; rivet sleeve construction	rivet sleeve construction; high profile and current	gold-alloy contacts; epoxy-sealed cap

2450HR	2450HRG	2450R	2450RC	2450RCG
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

2455RVB	2455RC	2455RG	2455RM
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

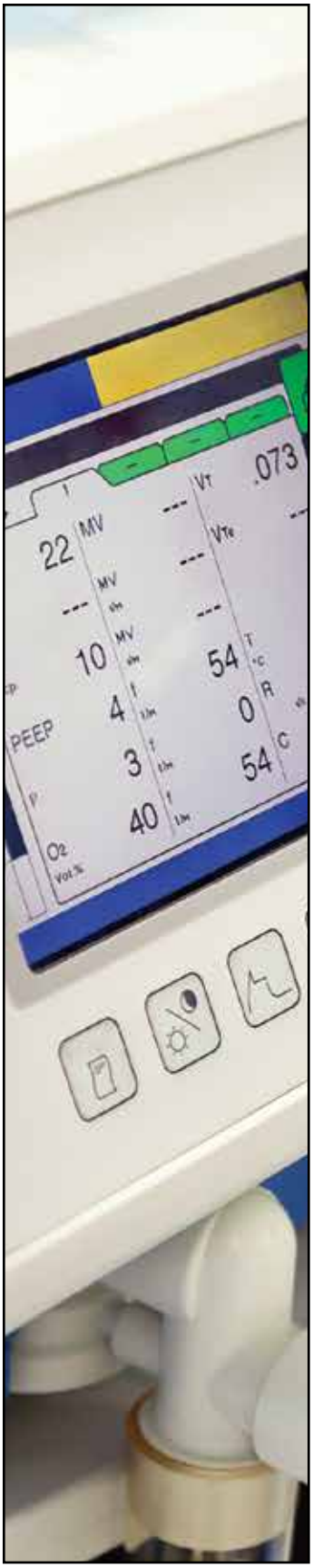
Flat or custom geometry configurations with single, multiple or variable watt densities to provide stable, uniform and customized heat output for unique application needs. Heaters may be bonded to other system components or combined with thermostats, thermistors, thermocouples, temperature sensors and thermal fuses to form custom-engineered heating systems. Potential applications include medical, HVAC/R, LCD displays, power generation, telecom and food service.



Series	78000
Description	transparent
Maximum power	0.8 W/cm^2 [5 W/in^2]
Operating/storage temperature range	-40 °C to 85 °C [-40 °F to 185 °F]
Size constraints	0,60 m x 0,43 m [22 in x 17 in]
Geometry	specific to customer requirements within size constraints
Heater trace pattern	continuous layer of ITO (Indium Tin Oxide) across entire surface
Construction	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
Standard wire	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw
PSA	yes
Approvals	–
Features	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^2 [40 W/in^2]	6.2 W/cm^2 [40 W/in^2]	6.2 W/cm^2 [40 W/in^2]
Kapton® insulated: 177 °C [350 °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	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 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw
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
Honeywell Humidicon™



Offers a range of accuracies from ±1.7 %RH typ. to ±4.5 %RH typ., wide operating temperature ranges, and low hysteresis. Potential applications include HVAC/R, air compressors, weather stations, telecom cabinets, respiratory therapy, and incubators/microenvironments.

Series	Honeywell HumidIcon™ HIH6000	Honeywell HumidIcon™ HIH6100
Description	digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package
Humidity accuracy	±4.5 %RH typ.	±4.0 %RH typ.
Temperature accuracy	±1.0 °C typ.	±1.0 °C max.
Operating temperature range	-40 °C to 100 °C [-40 °F to 212 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
Hysteresis	–	–
Output	I²C or SPI	I²C or SPI
Package type	SIP 4 Pin or SOIC-8 SMD	SIP 4 Pin or SOIC-8 SMD
Response time	6 s typ. in 20 l/min minimum airflow	6 s typ. in 20 l/min minimum airflow
Long-term stability	±1.2 %RH for five years	±1.2 %RH for five years
Operating humidity range	0 %RH to 100 %RH	0 %RH to 100 %RH
Compensated humidity range	20 %RH to 80 %RH	10 %RH to 90 %RH
Moisture/dust filter	yes (some listings)	yes (some listings)
Voltage supply	3.3 Vdc typ.	3.3 Vdc typ.
Features	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs

Honeywell HumidIcon™ HIH7000	Honeywell HumidIcon™ HIH8000	Honeywell HumidIcon™ HIH9000
digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package
±3.0 %RH typ.	±2.0 %RH typ.	±1.7 %RH typ.
±1.0 °C typ.	±0.8 °C typ.	±0.6 °C typ.
-40 °C to 100 °C [-40 °F to 212 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]
–	–	±1.0 %RH
I^2C or SPI	I^2C or SPI	I^2C or SPI
SIP 4 Pin or SOIC-8 SMD	SIP 4 Pin or SOIC-8 SMD	SIP 4 Pin or SOIC-8 SMD
6 s typ. in 20 l/min minimum airflow	6 s typ. in 20 l/min minimum airflow	8 s max., 1/e slow moving air
±1.2 %RH for five years	±1.2 %RH for five years	±1.2 %RH for five years
0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH
20 %RH to 80 %RH	10 %RH to 90 %RH	10 %RH to 90 %RH
yes (some listings)	yes (some listings)	yes (some listings)
3.3 Vdc typ.	3.3 Vdc typ.	3.3 Vdc typ.
industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs

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-5030/5031	HIH-4000
Description	covered, filtered or unfiltered integrated circuit	integrated circuit
Output	analog voltage	analog voltage
Package type	surface mount	SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)
Response time	5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air
Long-term stability	±1.2 %RH for five years; ±0.25 %RH each year	±1.2 %RH for five years; ±0.25 %RH each year
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Operating humidity range	0 %RH to 100 %RH	0 %RH to 100 %RH
Moisture/dust filter	yes (some listings)	no
Cover/case	yes	no
Calibration and data print out	no	yes (some listings)
Accuracy	±3 %RH	±3.5 %RH
Voltage supply	2.7 Vdc to 5.5 Vdc	4 Vdc to 5.8 Vdc
Features	surface mount package; voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant

HIH-4010/4020/4021	HIH-4030/4031	HIH-4602-A, C	HIH-4602-L, L-CP
covered or uncovered, filtered or unfiltered integrated circuit	covered, filtered or unfiltered integrated circuit	monolithic IC with integral thermistor or precision RTD	integrated circuit
analog voltage	analog voltage	analog voltage (for humidity), resistance (for temperature)	analog voltage
SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)	surface mount	TO-5 can	slotted TO-5 can
5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air	50 s typ. 1/e in slow moving air	30 s typ. 1/e in slow moving air
±1.2 %RH for five years; ±0.25 %RH each year	±1.2 %RH for five years	±1.2 %RH for five years	±1.2 %RH for five years
-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]
0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH
yes (some listings)	yes (some listings)	yes	no
yes (some listings)	yes	yes	yes
yes (some listings)	yes (some listings)	yes (some listings)	yes (some listings)
±3.5 %RH	±3.5 %RH	±3.5 %RH	±3.5 %RH
4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc
voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant	surface mount package; voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	humidity and temperature sensing in one package; near linear voltage output vs. %RH; laser trimmed; chemically resistant; built-in static protection	near linear voltage output vs %RH; laser-trimmed; chemically resistant; enhanced accuracy, fast response

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 reliab

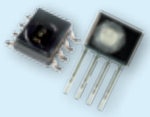
With more than 50,000 sensing, switching and control products ranging from snap-action, limit, toggle and pressure switches to position, spe

SENSORS

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 • HVAC Equipment

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 • Transportation (Heavy Equipment and Alternative Fuel Vehicles) System • Pneumatics • Hydraulics

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 • Industrial Automation



Humidity sensors: Digital, analog, and combined humidity/temperature sensing versions. Provide on-chip signal conditioning with accuracy capability to ±1.7 %RH. Stable, reliable, low-drift performance. Standardized, platform-based sensors.
May be used in: Medical • HVAC/R • Weather Stations • Air Compressors • Telecommunications • Grain Storage • Incubators

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 • Wattmeters

Flexible heaters: Flat or custom geometry configurations with single, multiple and variable watt densities. Stable, uniform heating. Can be bonded parts or combined in value-added assemblies.
May be used in: Medical • HVAC/R • LCD Displays • Power Generation • Telecommunication

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 • Transmissions

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 • Temperature Compensation

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 • Weight Sensing

ELECTROMECHANICAL SWITCHES

MICRO SWITCH™ basic switches: Snap-action precision switches. Compact. Lightweight. Designed for repeatability and enhanced life. Basic switches: large, standard, miniature, subminiature, hermetically sealed, water-tight and high-temperature versions.
May be used in: Vending Machines • Communication Equipment • HVAC • Appliances • Automotive • Electronic Gaming Machinery • Valve Controls • Irrigation Systems • Foot Switches • Pressure • Temperature Controls

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 • Underwater

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 • Hazardous Waste Handling Facilities

Key and rotary switches: Environmentally sealed, 2-3-4 position switches. 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

Pressure and vacuum switches: Feature setpoints from 3 psi to 4500 psi. Rugged components have enhanced repeatability, flexibility and wide media capability. Uses diaphragm or quad seal/piston.
May be used in: Transmissions • Hydraulics • Brakes • Steering • Generators/Compressors • Dental Air • Embalming Equipment • Oxygen Concentrators • Air Cleaners • Fuel Filters • Pool Water Pressure

MICRO SWITCH™ toggle switches: Hermetic and environmentally sealed options. Enhanced reliability. Center pin for ultimate stabilization. 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 • Military/Commercial Aviation

LIMITLESS™ WIRELESS SOLUTIONS

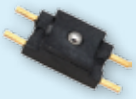
Limitless™ switches and receivers: Combines the best of MICRO SWITCH™ limit switches with commercial wireless technology. Beneficial for remote monitoring where wiring/maintenance is not physically possible or economically feasible. Used for position sensing and presence/absence detection.
Limitless™ Operator Interface: Adds a human interface device to the product-driven interfaces of Limitless™ switches and receivers. Choose and install a desired operator or utilize one of Honeywell's pushbuttons.
May be used in: Valve Position • Crane Boom/Jib/Skew Position • Lifts • Material Handling • Presses • Construction/Ag Machines • Conveyors • Industrial Environments • Remote/Temporary Equipment • Grain Diverters or Flaps • Door Position

ility. Industry knowledge. Expertise. Standard with every order.

eed, pressure and airflow sensors, Honeywell Sensing and Control has one of the broadest sensing and switching portfolios available.

Position sensors: The **SMART position sensor** measures linear, angular or rotary 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, and 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 • 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 • Diameter Control

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 • Non-Invasive Medical Equipment



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 • Kidney Dialysis Machines

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 • Door/Hatch Monitoring

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 • Motors

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 • Ventilation Equipment

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 • Aerospace

MICRO SWITCH™ aerospace-grade pressure switches: Lightweight, compact pressure switches. Meets military and DO-160 standards. Lower operating force provides application versatility with enhanced precision. Design modularity allows for configuration of the switch, facilitating rapid customization.
May be used in: Aerospace Systems • Engines, Fuel Pressure and Hydraulic Systems • Military Ground Vehicles • Ordnance and Munitions Release Systems • Military Maritime Systems

MICRO SWITCH™ limit switches: Broadest and deepest limit switch portfolio. Rugged, dependable position detection solutions. MICRO SWITCH™ heavy-duty limit switches (HDLS), medium-duty and global limit switches. Hermetically and environmentally sealed switches.
May be used in: Machine Tools • Woodworking • Textile • Printing Machinery • Metal Fabrication • Balers/Compactors • Forklifts • Bridges • Robotics • Wind Turbines • Elevators • Moving Stairs • Doors • Dock Locks/Levelers • Aerial Lifts • Cranes • Conveyors • Rail • Shipboards • Dock Side

MICRO SWITCH™ pushbutton switches: Lit or unlit. 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 • Flight Decks • Medical Instrumentation • Process Control

MICRO SWITCH™ sealed and standard rocker switches: Wide range of electrical and display design. Many shapes, sizes, buttons 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 • Commercial Aviation

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

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 **sensing.honeywell.com**

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Стандарт Электрон Связь

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Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

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