

THERMAL PRODUCTS

Product Range Guide



Honeywell

To improve your world, you need to know what is going on.

Honeywell Advanced Sensing Technologies has more than 50,000 products, ranging from snap-action, limit, toggle, and pressure switches to position, speed, pressure, temperature, air flow, force, and acceleration sensors. Each allows you to take control of your world by providing information to make better decisions. Honeywell SIOT provides one of the broadest sensing and switching portfolios so you can take control of your world.

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.

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 world-class product designs, technology integration, and customer-specific manufacturing.

Global service, sourcing, and manufacturing. Industry-leading engineers. Value-added assemblies and solutions. A one-stop, full-service, globally competitive supplier.



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Temperature Sensors | Temperature Probes

Compact and easy to install. 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. Potential applications include transportation, compressors, HVAC/R, automation control, and aviation.



| Series | LTP | R300 | ES110 |
|-------------------------------------|---|--|---|
| Temp. sensing type | immersion/air-gas | immersion | air-gas |
| Thermistor type | NTC | RTD | NTC |
| Nominal resistance at 25°C [77°F] | 1000 Ohm, 2252 Ohm, 2057 Ohm, 2795 Ohm | 100 Ohm | 2000 Ohm |
| Operating temperature range | -40°C to 150°C [-40°F to 302°F] | -40°C to 275°C [-40°F to 572°F] continuous, excursion to 300°C [572°F] for 10 minutes max. | -40°C to 150°C [-40°F to 302°F] |
| Housing material | brass hex, stainless steel probe tip | stainless steel | brass |
| Electrical and mechanical interface | Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, Deutsch DT04-2P; M10 to M18, 3/4 UNF, or G 1/4 threads, two hex options | overmolded connector with M14 x 1.50 thread | overmolded connector with M10 x 1.25 or M12 x 1.50 thread |
| Features | low temperature passive probes have durable, closed-tip design | enhanced response, reliability, and accuracy; stainless steel construction | exposed thermistor, rugged design, brass encapsulation |



| Series | ES120 | 500 | 6655 |
|-------------------------------------|---|--|---|
| Temp. sensing type | immersion | air-gas/immersion-liquid level/surface | air/surface |
| Thermistor type | NTC or KTY | NTC | NTC |
| Nominal resistance at 25°C [77°F] | 2000 Ohm | 200 Ohm to 1,000,000 Ohm (inclusive) | 10,000 Ohm, 12,000 Ohm |
| Operating temperature range | -40°C to 150°C [-40°F to 302°F] | -40°C to 300°C [-40°F to 572°F] (inclusive) | -20°C to 110°C [-4°F to 230°F] |
| Housing material | brass | plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing | phenolic |
| Electrical and mechanical interface | overmolded connector with M10 x 1.25, M10 x 1.0, M12 x 1.5, M14 x 1.50 thread, or 1/8 PTF | wide variety of connectors, lead types, materials, and insulation | quick connect terminal: (90°, 0.25 in), (0°, 0.25 in), (45°, 0.25 in), (90°, 0.1875 in) |
| Features | enclosed thermistor, rugged design, brass encapsulation | wide selection of housing, resistance, and termination options | low, compact profile, tight interchangeability, enhanced accuracy and response time |

Silicon-based, thin film RTDs (Resistance Temperature Detectors) are laser trimmed for accuracy and interchangeability. Offer stable, fast linear outputs with a wide temperature range. Accurate and interchangeable without recalibration. Available in discrete or packaged versions in plastic and ceramic, miniaturized and surface mount housings.



| Series | HEL-700 | 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 AWG or 24 AWG lead wire | SIP |
| Base resistance and interchangeability | 100 Ohm: ±0.1 % at 0°C 100 Ohm: ±0.2 % at 0°C 1000 Ohm: ±0.1 % at 0°C 1000 Ohm: ±0.2 % at 0°C | 100 Ohm: ±0.1 % at 0°C 100 Ohm: ±0.2 % at 0°C 1000 Ohm: ±0.1 % at 0°C 1000 Ohm: ±0.2 % at 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 AWG nickel-coated, stranded copper 28 AWG 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-776/777 | 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 % at 0°C 100 Ohm: ±0.2 % at 0°C 1000 Ohm: ±0.1 % at 0°C 1000 Ohm: ±0.2 % at 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 | Cu alloy 194 solder dipped with Sn/Ag | Pt-clad Ni wire and end termination galvanic Sn-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 |

Potential applications include HVAC, electronics assemblies, semiconductors, and process control. motor overload and semiconductor protection, electronic assembly thermal management and temperature compensation, as well as HVAC/R equipment.





















| 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 and interchangeability | 100 Ohm: ±0.1 % at 0°C 100 Ohm: ±0.2 % at 0°C 1000 Ohm: ±0.1 % at 0°C 1000 Ohm: ±0.2 % at 0°C | R2000 Ohm ±5 Ohm at 20°C |
| Self-heating | <0.3 mW/°C typ. | - |
| Termination material | 28 AWG 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 | 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 such as chromatography, thermal conductivity and gas analysis.










| | | | | | | | | | |
|-----------------------------------|---|--|---|---|---|--|--|--|---|
| |  |  |  |  |  |  |  |  |  |
| Series | 111 | 112 | 115 | 120 | 121 | 126 | 128 | 129 | 135 |
| Description | small, hermetically sealed glass bead | large, hermetically sealed glass bead | E-I tested and matched beads on header assembly | mini glass probe | standard glass probe | matched large glass bead | matched mini glass probe | matched large glass probe | glass encapsulated chip, DO-35 type |
| 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] | -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] |
| Dissipation constant in still air | 0.1 mW/°C | 0.4 mW/°C | varies with assembly type | 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 |
| Time constant in air | 0.5 s | 4.0 s | 0.5 s | 10.0 s | 22.0 s | 4.0 s | 10.0 s | 22.0 s | 4.0 s |
| Nominal resistance at 25°C [77°F] | 1 kOhm, 2 kOhm, 8 kOhm, 10 kOhm, 100 kOhm | 200 Ohm, 500 Ohm, 1 kOhm, 2 kOhm, 5 kOhm, 10 kOhm, 50 k Ohm, 100 kOhm, 500 kOhm, 2 MOhm | 2 kOhm, 8 kOhm | 1 kOhm, 2 kOhm, 10 kOhm | 2 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 kOhm, 1 MOhm | 2 kOhm, 100 kOhm | 2 kOhm, 15 kOhm | 2 kOhm, 4 kOhm | 1 kOhm, 2 kOhm, 5 kOhm, 10 Ohm, 20 kOhm, 25 kOhm, 30 kOhm, 47 kOhm, 50 kOhm, 100 kOhm, 200 kOhm, 230 kOhm, 500 kOhm, 1 MOhm, 5 MOhm |
| Maximum diameter | 0,36 mm [0.014 in] | 1,14 mm [0.045 in] | 0,36 mm [0.014 in] | 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] |
| Termination material | platinum iridium | platinum iridium | glass to metal header | dumet | dumet | platinum iridium | dumet | dumet | tinned copper-clad steel |
| Lead length | 9,6 mm [0.375 in] | 9,6 mm [0.375 in] | 31,75 mm [1.25 in] | 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] |
| 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 | 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 |

| | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|--|---|---|---|
| |  |  |  |  |  |  |  |  |  |
| Series | 140 | 142 | 143 | 173 | 175 | 192 | 194 | 197 | ICL |
| Description | small disc | large disc | large disc | EIA 0805 surface mount, end-banded | 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 |
| 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 150°C [-76°F to 302°F] | -60°C to 125°C [-76°F to 257°F] | -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] |
| Dissipation constant in still air | 3.0 mW/°C, 4.0 mW/°C | 3.0 mW/°C, 4.0 mW/°C | 5 mW/°C to 7 mW/°C | 3.5 mW/°C | 3.5 mW/°C | 0.75 mW/°C | 0.75 mW/°C | 0.75 mW/°C | 12.7 mW/°C to 23 mW/°C |
| Time constant in air | 10.0 s | 10.0 s | 16.0 s to 20.0 s | 10.0 s | 10.0 s | 15.0 s | 15.0 s | 15.0 s | 32 s to 93 s |
| Nominal resistance at 25°C [77°F] | 500 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 k Ohm | 500 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 k Ohm | 100 Ohm, 200 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 30 kOhm | 500 Ohm, 5 kOhm, 10 kOhm, 22 kOhm, 33 kOhm, 47 kOhm, 50 kOhm, 100 kOhm | 5 kOhm, 10 kOhm, 5 kOhm, 100 k Ohm, 440 kOhm | 500 Ohm, 1 kOhm, 2.252 Ohm, 3 kOhm, 5 kOhm, 10 kOhm, 30 kOhm, 50 k Ohm, 100 kOhm | 2,252 Ohm, 3 kOhm, 5 kOhm, 10 kOhm, 30 kOhm, 100 kOhm, 50 kOhm | 300 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 kOhm | 0.5 Ohm to 220 Ohm ±20 % |
| Maximum diameter | 2,54 mm [0.1 in] | 3,81 mm [0.15 in] | 6,35 mm [0.25 in] | EIA 0805 SMD | EIA 1206 SMD | 2,413 mm [0.095 in] ¹ | 2,413 mm [0.095 in] ¹ | 2,413 mm [0.095 in] ¹ | 9.5 mm [0.374 in] to 32 mm [1.26 in] |
| Termination material | tinned copper | tinned copper | tinned copper | solder-plated nickel barrier | solder-plated nickel barrier | tinned copper, alloy 180 | solid nickel, Teflon® insulated | tinned copper, alloy 180 | tinned copper |
| Lead length | 38,1 mm [1.50 in] | 38,1 mm [1.50 in] | 38,1 mm [1.50 in] | – | – | 38,1 mm [1.50 in] | 38,1 mm [1.50 in] | 38,1 mm [1.50 in] | [25,4 mm] 1 in min. |
| Features | pc-board mountable, rugged design, solderable leads | pc-board mountable, rugged design, solderable leads | rugged design, pc-board mountable, solderable leads | surface mount, tape and reel, glass-coated ceramic, 0805 EIA package | 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 |

¹On a 2252 and 3000 Ohm part, diameter can be up to 3,05 mm [0.120 in] max.

Provide 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 | 3106 Low-level Hermetic | 3150 Low Silhouette Hermetic | 3156 Low-level Silhouette Hermetic | 3001/3004 Series Non-Hermetic |
| Description | custom packaged | hermetic | UL-approved hermetic | low-level hermetic | low silhouette hermetic | low level, silhouette hermetic | low profile silhouette |
| Amperage | dependent on the internal device | 2.0 A/1.0 A/5.0 A | 3.0 A resistive max. | 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)* |
| 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 | 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 |
| 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] | -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] |
| 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] | -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] |
| 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 | 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) |
| 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 | 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 MW, 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. | 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 mW |
| 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 | 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 | - |
| Moisture resistance | 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 106 | - |
| Approvals | - | - | UL/CSA | - | - | - | 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 | 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

Provide 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 | 3MS1 QPL | 3500 | 3800 Industrial-Grade | 3600/3601 Custom-Packaged |
| Description | aerospace | low silhouette hermetic | military | military | severe-duty applications | PCB mountable TO-5 |
| Amperage | 5.0 A resistive | 2.0 A resistive | 5 A resistive | 5 A resistive | 7 A resistive | 1 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 | 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 |
| Operating temperature range | -51°C to 163°C [-60°F to 325°F] | -29°C to 177°C [-20°F to 350°F] | -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] |
| Environmental exposure range | -65°C to 177°C [-85°F to 350°F] | -65°C to 260°C [-85°F to 500°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] |
| Dielectric strength | MIL-STD-202, Method 301; 1250 Vac | MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case | 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 |
| Insulation resistance | MIL-STD-202, Method 302; 500 MOhm | MIL-STD-202, Method 302; 500 MOhm | MIL-STD-202, Method 302; 500 MW | MIL-STD-202, Method 302; 500 MW | MIL-STD-202, Method 302, Cond. B; 50 MW min. terminal to case | 20 mW at 500 Vdc |
| Contact resistance | MIL-STD-202, Method 307; 0.025 Ohm max. | MIL-STD-202, Method 307; 0.050 Ohm max. | MIL-STD-202, Method 307; 0.050 W max. | MIL-STD-202, Method 307; 0.050 W max. | MIL-STD-202, Method 307; 50 mW max. | 60 mW |
| Hermetic seal | MIL-STD-202, Method 112; Cond. C | MIL-STD-202, Method 112; Cond. C | 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 |
| Moisture resistance | 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 | – |
| Shock | MIL-STD-202, Method 213; 750 G | MIL-STD-202, Method 213; 100 G | MIL-STD-202, Method 213; 100 G | MIL-STD-202, Method 213; 400 G | MIL-STD-202, Method 213; 400 G | – |
| Vibration | MIL-STD-202, Method 204; 30 G; MIL-STD-202, Method 214; 50 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 204; 20 G | – |
| Thermal shock | MIL-STD-202, Method 107; Cond. B | MIL-STD-202, Method 107; Cond. B | 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 | MIL-STD-202, Method 101; Cond. B | MIL-STD-202, Method 101; Cond. B | – | – |
| Acceleration | MIL-STD-202, Method 212; 20 G | – | MIL-STD-202, Method 212; 20 G | MIL-STD-202, Method 212; 20 G | – | – |
| Approvals | MIL-S-24236/NASA S-311-641/01 | MIL-S-24236 | qualified to MIL-S-24236; QPL listed | meets or exceeds the requirements of 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 | 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 |

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

Provide 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 | 2450HR | 2450HRG | 2450R | 2450RC | 2450RCG |
|------------------------------|---|--------------------------------|--|---|--|--|--|---|
| Use | heat detection | high current | low voltage | high current | low current | high current | high current | low voltage |
| Reset type | automatic | manual | manual | automatic | automatic | automatic | automatic | automatic |
| Housing material | phenolic, epoxy seal cap and terminals | ceramic | ceramic | phenolic | phenolic | phenolic | ceramic | ceramic |
| Functional property | open or close on rise | open on rise | open on rise | open or close on rise | open on rise | open or close on rise | open or close on rise | open or close on rise |
| Amperage | 3 A | 15 A/10 A | 0.5 A | 15 A/10 A | 0.5 A | 15 A/10 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] | 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] |
| 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] | -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] |
| Contacts | WE-1 gold alloy cross point | silver/nickel alloy | WE-1 gold alloy cross point | silver/nickel alloy | WE-1 gold alloy cross point | silver/nickel alloy | silver/nickel alloy | WE-1 gold alloy cross point |
| Approvals | UL | UL, CSA, VDE | UL, CSA, VDE | UL, CSA | UL, CSA | UL, CSA | UL, CSA, VDE | UL, CSA, VDE |
| Features | gold-alloy contacts; epoxy-sealed cap and terminals | rivet sleeve construction | gold-alloy contacts; rivet sleeve construction | 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 |



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

Flat or custom geometry configurations with single, multiple or variable Watt densities provide stable, uniform, and customized heat output for unique application needs. May be bonded to other system components or combined with other thermal products to form custom-engineered heating systems. Potential applications include medical, HVAC/R, and LCD displays,



| Series | 78000 | 3400 | 3100 | 3200 |
|-------------------------------------|---|--|--|--|
| Description | transparent | Kapton® insulated or Kapton® insulated high temperature | silicon wire-wound | silicon chemically etched |
| Maximum power | 0.8 W/cm² [5 W/in²] | 6.2 W/cm² [40 W/in²] | 6.2 W/cm² [40 W/in²] | 6.2 W/cm² [40 W/in²] |
| Operating/storage temperature range | -40°C to 85°C [-40°F to 185°F] | 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) |
| Size constraints | 0,60 m x 0,43 m [22 in x 17 in] | 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] |
| Geometry | specific to customer requirements within size constraints | specific to customer requirements within size constraints | specific to customer requirements | specific to customer requirements within size constraints |
| Heater trace pattern | continuous layer of ITO (Indium Tin Oxide) across entire surface | specific to customer requirements | specific to customer requirements | specific to customer requirements |
| 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 style="list-style-type: none">UL 1180 Teflon®gauge per customer requestotherwise selected for max. heater current draw | <ul style="list-style-type: none">UL 1180 Teflon®gauge per customer requestotherwise selected for max. heater current draw | <ul style="list-style-type: none">UL 1180 Teflon®gauge per customer requestotherwise selected for max. heater current draw | <ul style="list-style-type: none">UL 1180 Teflon®gauge per customer requestotherwise selected for max. heater current draw |
| PSA | yes | yes | yes | yes |
| Approvals | – | UL, CSA | UL, CSA, TUV | UL, CSA, TUV |
| Features | no wires in clear view area, optical grade, thin film polyester, low power consumption | 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 |



Digital output-type relative humidity and temperature sensor combined in same package. Offer a range of humidity accuracies from ±2.0 %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 | Honeywell HumidIcon™ HIH7000 | Honeywell HumidIcon™ HIH8000 |
|-----------------------------|--|--|--|--|
| Description | digital output-type relative humidity (RH) and temperature sensor combined in same package | digital output-type relative humidity (RH) and temperature sensor combined in same package | digital output-type relative humidity (RH) and temperature sensor combined in same package | digital output-type relative humidity (RH) and temperature sensor combined in same package |
| Humidity accuracy | ±4.5 %RH typ. | ±4.0 %RH typ. | ±3.0 %RH typ. | ±2.0 %RH typ. |
| Temperature accuracy | ±1.0°C typ. | ±1.0°C max. | ±1.0°C typ. | ±0.8°C typ. |
| Operating temperature range | -40°C to 100°C [-40°F to 212°F] | -25°C to 85°C [-13°F to 185°F] | -40°C to 100°C [-40°F to 212°F] | -40°C to 125°C [-40°F to 257°F] |
| Hysteresis | – | – | – | – |
| Output | I ² C or SPI | I ² C or SPI | I ² C or SPI | I ² C or SPI |
| Package type | SIP 4 Pin or SOIC-8 SMD | SIP 4 Pin or SOIC-8 SMD | 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 | 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 | ±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 | 0 %RH to 100 %RH | 0 %RH to 100 %RH |
| Compensated humidity range | 20 %RH to 80 %RH | 10 %RH to 90 %RH | 20 %RH to 80 %RH | 10 %RH to 90 %RH |
| Moisture/dust filter | yes (some listings) | yes (some listings) | yes (some listings) | yes (some listings) |
| Voltage supply | 3.3 Vdc typ. | 3.3 Vdc typ. | 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 | 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. Covered, filtered or unfiltered integrated circuit available. Potential applications include refrigeration, drying, meteorology, battery-powered systems, OEM assemblies, HVAC/R, office automation, and medical.



| | | | | | | |
|--------------------------------|--|---|---|--|--|--|
| |  |  |  |  |  |  |
| Series | HIH-5030/5031 | HIH-4000 | HIH-4010/4020/4021 | HIH-4030/4031 | HIH-4602-A, C | HIH-4602-L |
| Description | covered, filtered or unfiltered integrated circuit | integrated circuit | covered or uncovered, filtered or unfiltered integrated circuit | covered, filtered or unfiltered integrated circuit | monolithic IC with integral thermistor or precision RTD | integrated circuit |
| Output | analog voltage | analog voltage | analog voltage | analog voltage | analog voltage (for humidity), resistance (for temperature) | analog voltage |
| Package type | surface mount | 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) | surface mount | TO-5 can | slotted TO-5 can |
| Response time | 5 s typ. 1/e in slow moving air | 5 s typ. 1/e in slow moving air | 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 |
| 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 | ±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 |
| Operating temperature range | -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 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 | 0 %RH to 100 %RH | 0 %RH to 100 %RH | 0 %RH to 100 %RH | 0 %RH to 100 %RH |
| Moisture/dust filter | yes (some listings) | no | yes (some listings) | yes (some listings) | yes | no |
| Cover/case | yes | no | yes (some listings) | yes | yes | yes |
| Calibration and data print out | no | yes (some listings) | yes (some listings) | yes (some listings) | yes (some listings) | yes (some listings) |
| Accuracy | ±3 %RH | ±3.5 %RH | ±3.5 %RH | ±3.5 %RH | ±3.5 %RH | ±3.5 %RH |
| Voltage supply | 2.7 Vdc to 5.5 Vdc | 4 Vdc to 5.8 Vdc | 4 Vdc to 5.8 Vdc | 4 Vdc to 5.8 Vdc | 4 Vdc to 5.8 Vdc | 4 Vdc to 5.8 Vdc |
| Features | near linear voltage output vs. %RH, laser trimmed, molded thermoset plastic housing, chemically resistant, tape and reel | near linear voltage output vs. %RH; laser trimmed, molded thermoset plastic housing, chemically resistant | near linear voltage output vs. %RH, laser trimmed, molded thermoset plastic housing, chemically resistant | 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 |



Humidity Sensors Used in Wall Mount Transducers (Asia-Pacific Region Only)

SCT Series

| | |
|-------------------------------|---|
| Description | humidity and temperature wall mount transducer using Honeywell Humidicon™ humidity/temperature sensor |
| Humidity measurement range | 0 % RH to 100 %RH non-condensation |
| Humidity accuracy | ±4 %RH (25°C [77°F], 10 %RH to 90 %RH) ±5 %RH (5°C to 50°C [41°F to 122°F], 10 %RH to 90 %RH) |
| Temperature measurement range | -5°C to 55°C [13°F to 131°F], 0°C to 70°C [32°F to 158°F], -25°C to 60°C [-13°F to 140°F] |
| Temperature accuracy | ±0.5°C, ±0.3°C, ±0.2°C, or ±1°C (depending on type of internal sensor used) |
| Long term drift | ±0.05 %RH typ. and ±1.2 %RH max. at 50 %RH for 5 years stability |
| Operating temperature range | -20°C to 70°C [-4°F to 158°F]: units with LDC display -25°C to 85°C [-13°F to 185°F]: units without LDC display |
| Voltage supply | 24 Vdc ±10%, 50 mA max. (units with 4 mA to 20 mA output) 18 Vdc to 40 Vdc, 15 mA max. or 24 Vac ±15%, 50/60 Hz, 50 mA max (units with 0 V to 10 V output) |

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.**

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