THE DATASHEET OF

175-103LAE-301

Honeywell

Temperature Sensors Line Guide

Accuracy and flexibility. Stability and speed. Honeywell Sensing and Productivity Solutions (S&PS) offers an impressive array of temperature sensors, each designed to provide enhanced reliability, repeatability, precision, and responsiveness. These temperature sensors are designed to maximize your component and product performance for most any potential application. That's why more customers worldwide call the industry's most trusted name for:

- Enhanced accuracy and stability
- Strong standard technology platforms
- A wide variety of housings and termination styles
- Easy-to-customize platforms
- High-temp product line expansion sensing capability
- Comprehensive technical support

FEATURES

PACKAGED TEMPERATURE PROBES

LTP Series.

Features: Response time [T63.2% of 25 °C to 85 °C step]: stirred silicon oil <15 s; stirred water <15 s; air flow 10 m/s <20 s • Accuracy: -40 °C to 25 °C [-40 °F to 77 °F]: ±2.5 °C, 25 °C to 100 °C [77 °F to 212 °F]: ±0.8 °C, 100 °C to 125 °C [212 °F to 257 °F]: ±2.0 °C, 125 °C to 150 °C [257 °F to 302 °F]: ±3.5 °C • Electrical interfaces are Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, and Deutsch DT04-2P • Probe length options: 20 mm to 50 mm (other lengths available upon request) • Retainer ring with hex provides complete location for socket wrench in axial and radial directions, enabling the operator to first locate the sensor inside the socket freely and more easily install the sensor • Ingress protection: IP67 • Vibration of 30 g sine wave,10 Hz to 2000 Hz • Mechanical shock of 50 g • Service pressure: 10 bar • Burst pressure: 40 bar • Wire harness (with or without a connector) or other sensing elements (PTC or RTD) available upon request

Benefits: Durable, closed-tip design maximizes reliability in harsh applications. Sensor's thermistor sensing element effectively senses gases, liquids or solids because of its enhanced sensitivity, accuracy and reliability. Easy-to-install threaded mounting provides reliable operation in harsh environments. Numerous options—from mechanical and electrical interface—simplify installation, allow customers to meet specific application needs, and facilitate backwards compatibility with most existing applications. Zero NRE (non-recurring engineering) costs for configurations. Reduces cost of ownership due to BOM (bill of materials), engineering, testing, NRE and tooling. Reduces design costs due to plug-and-play options, backwards integration, flexible offering, customization and non-standard offering. Potential transportation applications include temperature sensing for ambient air, automatic transmission systems, engine air inlet systems, engine cooling systems, engine lubrication systems, fuel systems, Haldex coupling systems, and hydraulic pump systems.

R300 Series.

Features: Wide temperature-range • Stainless steel construction • Enhanced response time • Enhanced accuracy • Enhanced reliability • Linear output • Extended life

Benefits: Robust, stainless steel closed-tip design for reliability in most aggressive environments, while still providing enhanced response time. One-piece sensor with integral connector for potential use in heavy duty vehicle engine exhaust gas recirculation systems, fluid or air temperature sensing within the engine environment or HVAC, or refrigeration compressor equipment.

500 Series.

Features: Choice of custom or existing designs • Wide selection of housing, resistance, and termination options • Wide operating temperature range

Benefits: Housing material ranges from all plastic to all-metal, and accommodates air/gas, fluid immersion or surface sensing requirements. Full range of custom or off-the-shelf thermistor and RTD-based solutions for a wide variety of potential industrial, transportation, and aerospace applications.

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Products for thousands of potential applications. Honeywell S&PS temperature sensors provide multiple choices:

Packaged Temperature Probes: These responsive sensors are often ideal for fluid, surface, and air/gas temperature sensing. Honeywell's temperature probes are offered in a variety of housing materials and styles, terminations and R-T curve types, depending on customers' application needs. Honeywell's packaged temperature probe assemblies incorporate either NTC (negative temperature coefficient) thermistors or RTD (resistance temperature detector) technology and operate under a wide range of environmental conditions. Whether it be an IP67 seal-rated oil temperature sensor used in the engine of a heavy duty vehicle, a surface temperature sensor used to monitor critical compressor temperatures in a transport refrigeration system, or an air temperature sensor rated to MIL-PRF-23648 used to measure aircraft engine – bleed air temperature inside the leading edge of an aircraft wing, Honeywell has the right technology, sensor packaging, testing, track record and application expertise to provide the right sensor solution for its customers. Customers trust and depend on Honeywell temperature sensors every day for their precision, stability, reliability and quality.

Packaged Temperature Probes

	LTP Series	R300 Series
Temperature sensing type	immersion/air-gas	immersion
Sensing element	NTC	RTD
Accuracy	-40 °C to 25 °C [-40 °F to 77 °F]: ±2.5 °C 25 °C to 100 °C [77 °F to 212 °F]: ±0.8 °C 100 °C to 125 °C [212 °F to 257 °F]: ±2.0 °C 125 °C to 150 °C [257 °F to 302 °F]: ±3.5 °C	better than ±3.0 °C from -40 °C to 300 °C typ.
Nominal resistance at 25 °C [77 °F]	1000 Ohm, 2252 Ohm, 2057 Ohm, 2795 Ohm	100 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 min. max.
Housing material	brass hex, stainless steel probe tip	stainless steel
Electrical and mechanical interface	Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, and 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

Packaged Temperature Probes

	ES110 Series	ES120 Series
Temperature sensing type	air/gas	immersion
Sensing element	NTC	NTC or KTY
Nominal resistance at 25 °C [77 °F]	2000 Ohm	2000 Ohm
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
Housing material	brass	brass
Electrical and mechanical interface	overmolded connector with M10x1.25 or M12 x 1.50 thread	overmolded connector with M10x1.25, M14 x 1.50 thread or 1/8 PTF

Discrete and Packaged RTD Sensors: Our platinum-based RTDs are laser-trimmed for accuracy and flexibility — designed to offer stable and fast linear outputs, accurate and interchangeable, plus plastic and ceramic, miniaturized and surface mount housings (including printed circuit board termination). Potential applications include motor overload and semiconductor protection, electronic assembly thermal management and temperature compensation, as well as HVAC equipment.

Discrete Thermistors: These sensors don't amplify, rectify, polarize or generate a signal, but rather change resistance with any change in temperature. The change can occur in the surrounding temperature or by passing a current through the thermistor to self-heat.

Packaged Temperature Probes	6655 Series	500 Series
Temperature sensing type	air/surface	air/gas, immersion, surface, and liquid level
Sensing element	NTC	NTC
Nominal resistance at 25 °C [77 °F]	10,000 Ohm, 12,000 Ohm	200 Ohm to 1,000,000 Ohm (inclusive)
Operating temperature range	-20 °C to 110 °C [-4 °F to 230 °F]	-60 °C to 300 °C [-76 °F to 572 °F] (inclusive)
Housing material	phenolic	plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing
Electrical and mechanical interface	quick connect terminal: (90°, 0.25 in), (0°, 0.25 in), (45°, 0.25 in), (90°, 0.1875 in)	wide variety of connectors and lead types, materials and insulation

Discrete RTD Sensors	HEL-705, 707, 710 Series	HEL-775 Series
Sensor type	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
Temperature coeffiecient	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° to +260°C (-94° to +500°F) fiberglass: -75° to +500°C (-100° 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. leadwire	SIP
Base resistance and interchangeability	100 Ohm ±1; 0.6 Ohm at 0 °C, 100 Ohm ±1; 1.2 Ohm at 0 °C, 1000 Ohm ±1; 0.6 Ohm at 0 °C, 1000 Ohm ±1; 1.2 Ohm at 0 °C	100 Ohm ±1; 0.6 Ohm at 0 °C, 100 Ohm ±1; 1.2 Ohm at 0 °C, 1000 Ohm ±1; 0.6 Ohm at 0 °C, 1000 Ohm ±1; 1.2 Ohm at 0 °C
Self-heating	<15 mW/°C for 0.85 O.D. typ.	<6,8 mW/°C typ., 9,7 mW/°C typ.

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Discrete RTD Sensors	HEL-777/776 Series	700 Series
Sensor type	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
Temperature coeffiecient	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] lead version: -50 °C to 130 °C [-58 °F to 266 °F]
Packaging type	molded plastic	radial chip or surface mount axial flip chip
Termination	SIP	leadwires or solderpads
Base resistance and interchangeability	100 Ohm ±1; 0.6 Ohm at 0 °C, 100 Ohm ±1; 1.2 Ohm at 0 °C, 1000 Ohm ±1; 0.6 Ohm at 0 °C, 1000 Ohm ±1; 1.2 Ohm at 0 °C	100 Ohm ±1; 0.6 Ohm at 0 °C, 100 Ohm ±1; 1.2 Ohm at 0 °C, 1000 Ohm ±1; 0.6 Ohm at 0 °C, 1000 Ohm ±1; 1.2 Ohm at 0 °C
Self-heating	<15 mW/°C typ.	0,4k /mW, 0.6k /mW or 0.8k/mW at 0 °C [32 °F]

Discrete and Packaged RTD Sensors	HRTS Series	TD Series
Sensor type	100 Ohm, 1000 Ohm platinum RTD	2000 Ohm silicon resistive element
Temperature coeffiecient	0.00385 Ohm/Ohm/°C, 0.00375 Ohm/Ohm/°C	N/A
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	leadwires	SIP or leadwires
Base resistance and interchangeability	100 Ohm ±1; 0.6 Ohm at 0 °C, 100 Ohm ±1; 1.2 Ohm at 0 °C, 1000 Ohm ±1; 0.6 Ohm at 0 °C, 1000 Ohm ±1; 1.2 Ohm at 0 °C	R2000 Ohm ±5 Ohm at 20 °C
Self-heating	<0,3 mW/°C typ.	N/A

Discrete Thermistors

	111 Series	112 Series	115 Series
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 °F to 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]

Discrete Thermistors

	120 Series	121 Series
Description	mini glass probe	standard glass probe
Operating temperature range	-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	0,7 mW/°C, 1,0 mW/°C	1,0 mW/°C
Time constant in air	10.0 s	22.0 s
Nominal resistance at [25 °F to 77 °F]	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
Maximum diameter	1,5 mm [0.060 in]	2,54 mm [0.10 in]
Termination material	dumet	dumet
Lead length	31,8 mm [1.25 in]	50,8 mm [2.00 in]

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Discrete Thermistors

	126 Series	128 Series	129 Series
Description	matched large glass bead	matched mini glass probe	matched large glass probe
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	0,8 mW/°C	2,1 mW/°C	3,0 mW/°C
Time constant in air	4.0 s	10.0 s	22.0 s
Nominal resistance at [25 °F to 77 °F]	2,000 Ohm; 100,000 Ohm	2,000 Ohm; 15,000 Ohm	2,000 Ohm; 4,000 Ohm
Maximum diameter	2,54 mm [0.10 in]	3,05 mm [0.120 in]	5,08 mm [0.20 in]
Termination material	platinum iridium	dumet	dumet
Lead length	9,6 mm [0.375 in]	31,8 mm [1.25 in]	50,8 mm [2.00 in]

Discrete Thermistors

	135 Series	140 / 142 Series	143 Series
Description	glass encapsulated chip, DO-35 type	disc	disc
Operating temperature range	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]
Dissipation constant in still air	2,5 mW/°C	3,0 mW/°C / 4,0 mW/°C	5 to 7 mW/°C
Time constant in air	4.0 s	10.0 s	16.0 s
Nominal resistance at [25 °F to 77 °F]	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	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
Maximum diameter	2,0 mm [0.080 in]	2,54 mm [0.10 in]	5,08 mm [0.20 in]
Termination material	tinned copper-clad steel	tinned copper	tinned copper
Lead length	28,6 mm [1.125 in]	38,1 mm [1.50 in]	38,1 mm [1.50 in]

Discrete Thermistors

	173 Series	175 Series
Description	EIA 0805 surface mount, end-banded	EIA 1206 surface mount, end-banded
Operating temperature range	-60 °C to 125 °C [-76 °F to 257 °F]	-60 °C to 125 °C [-76 °F to 257 °F]
Dissipation constant in still air	3,5 mW/°C	3,5 mW/°C
Time constant in air	10.0 s	10.0 s
Nominal resistance at [25 °F to 77 °F]	500 Ohm, 5,000 Ohm, 10,000 Ohm, 22,000 Ohm, 33,000 Ohm, 47,000 Ohm, 50,000 Ohm, 100,000 Ohm	5,000 Ohm, 10,000 Ohm, 50,000 Ohm, 100,000 Ohm, 440,000 Ohm
Maximum diameter	EIA 0805 SMD	EIA 1206 SMD
Termination material	solder plated NI barrier	solder plated NI barrier
Lead length	N/A	N/A

Discrete Thermistors

	192 Series	194 Series
Description	Uni-Curve with bare leads and epoxy	Uni-Curve with insulated leads and epoxy
Operating temperature range	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]
Dissipation constant in still air	0,75 mW/°C	0,75 mW/°C
Time constant in air	15.0 s	15.0 s
Nominal resistance at [25 °F to 77 °F]	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
Maximum diameter	2,413 mm [0.095 in]	2,413 mm [0.095 in]
Termination material	tinned copper, alloy 180	solid nickel, Teflon insulated
Lead length	38,1 mm [1.50 in]	38,1 mm [1.50 in]

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Discrete Thermistors

	197 Series	ICL Series
Description	chip with bare leads and epoxy	inrush current limiter
Operating temperature range	-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	0,75 mW/°C	12.7 mW/°C to 23 mW/°C
Time constant in air	15.0 s	32 s to 93 s
Nominal resistance at [25 °F to 77 °F]	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 %
Maximum diameter	2,413 mm [0.095 in]	9.5 mm [0.374 in] to 32 mm [1.26 in]
Termination material	tinned copper, alloy 180	tinned copper
Lead length	38,1 mm [1.50 in]	1 in min.

ES110 Series.

Features: Exposed thermistor • Rugged design • Brass encapsulation • Plastic overmold • Enhanced response time • Wide operating temperature range

Benefits: Overmolded, hexagonal shape for easy installation. Two end configurations available, depending on response or degree of protection required. All-plastic design reduces heat loss through the sensor. Exposed thermistor offers fast response for air/gas sensing, especially for potential transportation engine management systems and industrial applications.

ES120 Series.

Features: Enclosed thermistor • Rugged design • Brass encapsulation • Plastic overmold • Wide operating temperature range

Benefits: Overmolded, hexagonal shape for easy installation. All-plastic design reduces heat loss through the sensor. Enclosed thermistor may potentially be used for liquid temperature sensing in engine management systems and industrial applications.

6655 Series.

Features: Air/surface temperature sensing • NTC thermistor output • Low cost • Low, compact profile • Tight interchangeability • Enhanced accuracy • Enhanced response time • Wide operating temperature range • Variety of mounting brackets • Widely used sensor package footprint • Enhanced stability/ low drift

Benefits: Offers temperature measurements with enhanced response and accuracy on most flat surfaces and pipes in non-condensing applications. Allows greater flexibility in temperature monitoring and controlling. Tight interchangeability eliminates or reduces need for calibration. A wide operating temperature range allows application flexibility. Potential applications include water heaters and boilers, industrial ovens and ranges, copier diffuser rollers, and HVAC compressor or duct temperature sensing.

DISCRETE RTD SENSORS

HEL-700 Series.

Features: Linear resistance vs. temperature • Accurate and interchangeable • Enhanced stability • Teflon or fiberglass lead wires • Wide temperature range • Ceramic case material • Multiple sizes

Benefits: Fully assembled and ready to use without need for fragile splices to extension leads. Wide temperature range covers most potential applications such as HVAC, electronic assemblies and process control.

HEL-775 Series.

Features: Linear resistance vs. temperature • Accurate and interchangeable • Enhanced stability • Thin film platinum • Ceramic SIP package • Solderable leads • Small size

Benefits: Ceramic SIP package with solderable leads provides strong connections for wires or printed circuits. Ideal for PCBs, temperature probes and other lower temperature applications including HVAC, electronic assemblies and process control applications.

HEL-777/776 Series.

Features: Linear resistance vs. temperature • Accurate and interchangeable • Enhanced stability • Thin film platinum • Molded plastic SIP package • Solderable leads • Small size

Benefits: Molded plastic SIP package with solderable leads provides strong connections for wires or printed circuits. 1000 Ohm, 375 alpha version provides 10X greater sensitivity and signal to noise. Ideal for PCBs, temperature probes, or other potential applications including HVAC, electronic assemblies and process control.

700 Series.

Features: Linear resistance vs. temperature • Enhanced accuracy • Interchangeability • Surface mount versions • Enhanced stability • Enhanced time response • Wide temperature range • Cost effective

Benefits: Economical, miniature temperature sensors available in two sizes each of leaded and surface mount configurations. Surface mount in industry-standard 0805 and 1206 packages. 100 Ohm and 1000 Ohm base resistance in both 3850 ppm/K and 3750 ppm/K temperature coefficients (385 and 375 alphas). Tolerances meet DIN class A, DIN class B and DIN class 2B industry standards. Wide temperature range covers most potential applications. Including HVAC, electronic assemblies, thermal management and process control.

HRTS Series.

Features: Linear resistance vs. temperature • Resistance interchangeable • Accurate • Fast • Laser trimmed • Wide temperature range

Benefits: Fully assembled and ready to use without need for fragile splices to extension leads. Wide temperature range covers most potential applications including HVAC, electronic assemblies and process control applications.

TD Series.

Features: Linear resistance vs. temperature • Interchangeable without recalibration • Thin film • Laser trimmed • Long term stability • Air or liquid temperature sensing • Cost effective

Benefits: Provide 8 Ohm/°C sensitivity with inherently near linear output. Completely interchangeable without sensor-to-sensor recalibration. Silicon chip sensing element with proven thin film processing reliability. Individually laser trimmed. TD4A environmentally sealed liquid temperature sensors simple to install. TD5A miniature temperature sensors used where space is at a premium. Very small thermal mass for rapid response to temperature changes in potential industrial applications including HVAC, semiconductor protection, and process control.

DISCRETE THERMISTORS

111 Series.

Features: Enhanced response time • Hermetically sealed in glass • Enhanced long-term stability • Micro size • Relatively uniform size • Weldable platinum iridium leads

Benefits: Highly sensitive to electric power. Potential for use in self-heat applications such as gas flow measurement and thermal conductivity analysis. Micro size for use in extremely small application spaces, such as medical assemblies.

112 Series.

Features: Enhanced response time • Hermetically sealed in glass • Enhanced long-term stability • Small size • Meets MIL-T-23648 • Weldable platinum iridium leads

Benefits: Small sensors designed to provide maximum stability for potential low cost, general purpose temperature measurement and control applications as well as most stringent military and aerospace applications.

115 Series.

Features: E-I matched in air or helium • Resistance matched at 25 °C [77 °F] • Interchangeable pairs • Extended life • Compression-type glass hermetic seal • High pressure solder seal

Benefits: Two beads, each bead mounted to a special hermetically-sealed header. Use higher resistance units at higher ambient temperatures for maximum sensitivity. Potential for use in gas chromatography, thermal conductivity gas analysis instruments, medical and military/aerospace applications.

120 Series.

Features: Hermetically sealed in glass • Enhanced reliability and stablility • Weldable/solderable dumet leads

Benefits: Shock resistant, rugged, glass encapsulated units often ideal for immersion in fluid and convenient for mounting in air sensing assemblies. Extremely reliable. Wide variety of potential military and aerospace applications.

121 Series.

Features: Hermetically sealed in glass • Enhanced reliability and stablility • Weldable/solderable dumet leads

Benefits: Shock resistant, rugged, glass encapsulated units often ideal for immersion in fluid and convenient for mounting in air sensor sensing assemblies. Enhanced reliability. Potential for use in a wide variety of military and aerospace applications.

126 Series.

Features: Hermetically sealed in glass • Interchangeability • Accuracy • Enhanced sensitivity • Enhanced stability • Enhanced reliability • Small size • Cost effective

Benefits: May be selected to tolerances only limited to the system's capability available to test them. Precision sensing elements used where curve-matched interchangeability is required for precise temperature control and precision temperature indication.

128 Series.

Features: Hermetically sealed in glass • Interchangeability • Accuracy • Enhanced sensitivity, stability and reliability • Miniature size • Cost effective

Benefits: Miniature size for applications where space is at a premium. May be selected to tolerances only limited to the system's capability available to test them. Precision sensing elements for where curve-matched interchangeability is required for precise temperature control and precision temperature indication such as military, aerospace, medical, and instrumentation test equipment.

129 Series.

Features: Interchangeability • Accuracy • Enhanced sensitivity, stability and reliability • Small size • Cost effective

Benefits: May be selected to tolerances only limited to the system's capability available to test them. Precision sensing elements for where curve-matched interchangeability is required for precise temperature control and precision temperature indication such as military, aerospace, medical and instrumentation test equipment.

135 Series.

Features: Rugged DO-35 glass encapsulation • Enhanced temperature capability • Enhanced reliability • Uniform dimensions • Tape and reel • Cost effective

Benefits: Uniform dimensions and tape and reel for automated assembly. Rugged sensor designed for potential high-volume, cost-sensitive applications that demand enhanced reliability.

140 Series.

Features: Cost effective • PC board mountable • Rugged design • Versatile • Solderable leads

Benefits: Broad range of custom resistance values and R/T curves. Potential applications include low-cost applications with a maximum temperature of 150 °C [302 °F].

143 Series.

Features: Rugged design • PC board mountable • Solderable leads • Cost effective

Benefits: Broad range of custom resistance values and R/T curves. Potentially for use in high-volume, cost-sensitive applications.

173 Series.

Features: Surface mount • Tape and reel • Glass-coated ceramic • Solder-plated Ni • 0805 EIA package • Cost effective

Benefits: Surface mount for automated pick and place. Tape and reel for high volume applications such as PC boards. Glass-coated ceramic designed for long term reliability. Solder-plated Ni-barrier terminations easy to solder. Potential for use in high-volume, cost-sensitive applications.

175 Series.

Features: Surface mount • Tape and reel • Glass-coated ceramic • Solder-plated Ni • 1206 EIA package • Cost effective

Benefits: Surface mount for automated pick and place. Tape and reel for high volume applications such as PC boards. Glass-coated ceramic design for long term reliability. Solder-plated Ni-barrier terminations easy to solder. Potential for use in high-volume, cost-sensitive applications.

192 Series.

Features: Resistance temperature curve interchangeability • Accuracy • Enhanced stability • Enhanced life • Cost effective • Small size • Epoxy coated

Benefits: Resistance temperature-matched interchangeable units designed to provide cost savings by eliminating need for individual resistance temperature calibration and standardization of circuit components. Designed to simplify design and replacement in temperature measurement, indication, control and compensation of ambient temperature effects on a variety of integrated circuits and other semiconductor devices.

194 Series.

Features: Resistance temperature curve interchangeability • Accuracy • Enhanced stability • Enhanced life • Cost effective • Small size • Epoxy coated • Teflon-coated leads

Benefits: Resistance temperature-matched interchangeable units designed to provide cost savings by eliminating need for individual resistance temperature calibration and standardization of circuit components. Simplifies design and replacement in temperature measurement, indication, control and compensation of ambient temperature effects on a variety of integrated circuits and other semiconductor devices.

197 Series.

Features: Rapid response times • Small size • Epoxy coated

Benefits: Broad range of custom resistance and R/T values for potential applications including communications, medical, office automation, instrumentation test equipment, and aerospace electronics.

ICL Series.

Features: Cost effective • Enhanced reliability • Special high temp protective coating • Rugged design • PCB board mountable

Benefits: Designed to prevent damage to other electrical components. ICL absorbs electrical surge and the thermisotor's resistance decreases by a factor of 10 to 50; power drop across the ICL is reduced accordingly. For use in potential applications where the inrush of current can damage components in a switching power supply and other power devices when the equipment is turned on.

Warranty. 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 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.

For more information about Honeywell Sensing and Productivity Solutions' products, call **+1-815-235-6847** or **1-800-537-6945,** visit **sensing.honeywell.com**, or e-mail inquiries to **info.sc@honeywell.com**

⚠ WARNING

PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING

MISUSE OF DOCUMENTATION

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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