

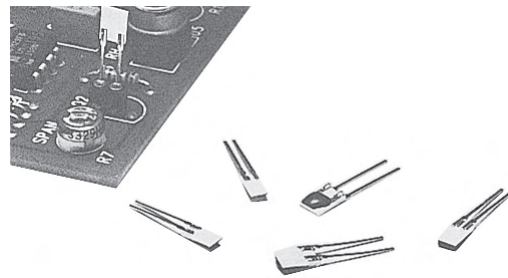
Ordering Information

Basic Model	Description
HEL-700	Thin film platinum RTD
Code 1 Temperature Coefficient	
-T	385 Platinum, 100 Ω, 0.00385 Ω/Ω/°C, DIN specification
-U	375 Platinum, 1000 Ω, 0.00375 Ω/Ω/°C
Code 2 Interchangeability	
-0	Standard Interchangeability, ±0.2% at 0°C
-1	Optional Interchangeability, ±0.1% at 0°C
Code 3 Package Type	
-A	Platinum Ribbon Leads
-B	Bare Chip, No leads

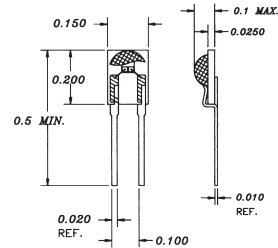
HONEYWELL HYCAL TEMPERATURE SENSORS THIN FILM RTD CHIPS HEL700 SERIES

FEATURES: Thin film Pt RTDs. Long term stable. Laser trimmed. High accuracy. 100Ω or 1000Ω versions. **SPECIFICATIONS:** Temperature Range: -200°C to 540°C (-300°F to 1000°F). Sensing Element: 1000Ω thin film platinum, Alpha = 0.00375 Ω/Ω/°C. 100Ω thin film platinum, Alpha = 0.00385 Ω/Ω/°C. Ice Point Resistance R₀: 1000 ±2Ω (±0.2%); ±1Ω (±0.1%) optional. 100 ±0.2Ω (±0.2%); ±0.1Ω (±0.1%) optional. Time Constant: <0.15 seconds in water at 3 ft/sec. <1 second on metal surfaces. <4 seconds in air at 10 ft/sec. Self Heating: >0.3 mW/°C. Interchangeability: ±0.5°C or 0.8% of temperature at ±0.2% R₀ Trim. ±0.3°C or 0.6% of temperature at ±0.1 R₀ Trim (optional). Stability: Better than 0.25°C per year. Insulation Resistance: >50 MegOhms at 50 Vdc at 25°C. Maximum Current: 2 mA for 1000Ω sensor to avoid self heating errors. 5 mA for 100Ω sensor to avoid self heating errors. Recommended Current: 1 mA maximum to minimize self heating. Case Material: 99% alumina substrate, vapour deposited alumina passivated resistance portion, refractory glass passivated overall. Lead Material: Platinum ribbon welded to thin film, 0.002 × 0.010 × 0.16 inches long nominal. Lead Pull Strength: 200 grams nominal pulling up from surface.

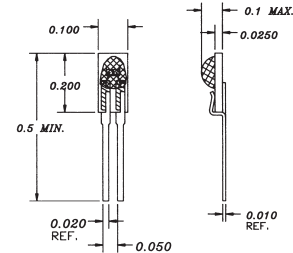
Cat. No.	Net Price
HEL700-T-0-A	\$13.88
HEL700-T-1-A	18.71
HEL700-U-0-A	11.86
HEL700-U-1-A	12.82
HEL700-U-1-B	11.86



P/N EL-775-A



P/N EL-775-B



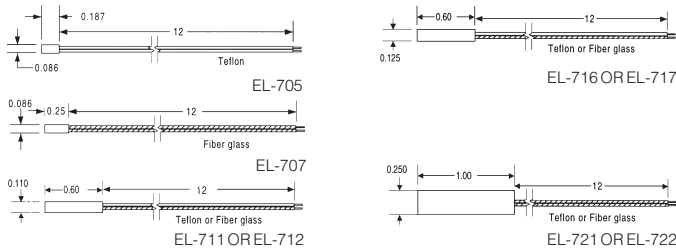
Ordering Information

Basic Model	Description
HEL-775-A	Platinum RTD on Solderable SIP Package, 0.100" lead spacing
HEL-775-B	Platinum RTD on Solderable SIP Package, 0.050" lead spacing
Code 1 Base Resistance & Alpha	
-T	100Ω Platinum Thin Film RTD, Alpha = 0.00385 Ω/Ω/°C
-U	1000Ω Platinum Thin Film RTD, Alpha = 0.00375 Ω/Ω/°C
Code 2 Base Resistance Interchangeability	
-0	Standard Interchangeability, ±0.2% at 0°C
-1	Optional Interchangeability, ±0.1% at 0°C

SOLDERABLE THIN FILM RTD HEL-775 SERIES

FEATURES: Low cost. High accuracy. 100Ω and 1000Ω. Interchangeable. No drift platinum. Solderable RTD. Epoxy sealed connections. **SPECIFICATIONS:** Temperature Range: -55°C to +150°C (-67°C to 302°F). Sensing Elements: 1000Ω thin film platinum; Alpha 0.00375 Ω/Ω/°C. 100Ω thin film platinum; Alpha 0.00385 Ω/Ω/°C. Ice Point Resistance: 1000 ±2 Ohm (±0.2%); ±1 Ohm (±0.1%) optional. 100 ±0.2 Ohm (±0.2%); ±0.1 Ohm (±0.1%) optional. Time Constant: 10 seconds nominal in air at 10 ft/sec. Self Heating, EL-775-A: 9.7 mW/°C nominal in air at 10 ft/sec. 4.3 mW/°C nominal in enclosed still air. Self Heating, EL-775-B: 6.8 mW/°C nominal in air at 10 ft/sec. 3.0 mW/°C nominal in enclosed still air. A Interchangeability: ±0.5°C from -55 to +60°C, 0.8% of other temperature at ±0.2% R₀ trim. ±0.3°C from -50 to +50°C, 0.6% of other temperature at ±0.1% R₀ trim. Long Term Stability: <0.05°C drift per 5 years in air environments. Liquid Thermal Shock: 150°C oil to ice water, 10 times with <0.15°C change. Insulation Resistance: >50 megOhms at 50 Vdc at 25°C. Recommended Current: 1 mA maximum in still air for <0.3°C (0.5°F) self heating. Case Material: Alumina substrate with epoxy protection. Lead Material: Phosphor bronze plated with bright tin lead 60/40 plating. Lead Configuration: 2-wire.

Cat. No.	Net Price
HEL775-A-T-O	\$14.32
HEL775-A-U-O	12.29
HEL775-B-T-O	14.32
HEL775-B-U-O	12.29



Ordering Information

Base Model	Lead Insulation	Sheath Diameter	Sheath Length
HEL-705	28 ga. TFE Teflon, 2-Wire Only	.085"	1.87"
HEL-707	28 ga. Fiberglass, 2-Wire Only	.085"	.250"
HEL-711	28 ga. TFE Teflon	.110"	.6"
HEL-712	28 ga. Fiberglass	.110"	.6"
HEL-716	24 ga. TFE Teflon	.125"	.6"
HEL-717	24 ga. Fiberglass	.125"	.6"
HEL-721	24 ga. TFE Teflon	.187"	1.0"
HEL-722	24 ga. Fiberglass	.187"	1.0"

Code 1	Temperature Coefficient
-T	100 Ohm Platinum Thin Film RTD, 0.00385 ohm/ohm/°C, 3-wire leads, DIN Specification
-U	1000 Ohm Platinum Thin Film RTD, 0.00375 ohm/ohm/°C, 2-wire leads

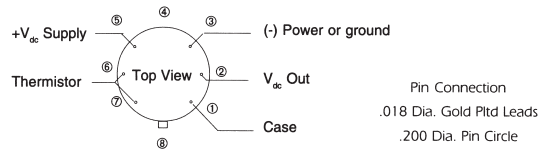
Code 2	Interchangeability
0	Standard Interchangeability ±0.2% at 0°C
-I	Standard Interchangeability ±0.1% at 0°C

Code 3	Lead Wire Length
-NN	NN = Inches, 12" Standard

PLATINUM RTDS HEL-700 SERIES

FEATURES: Thin film Pt RTDs. Long term stable. Laser trimmed. High accuracy. 100Ω and 1000Ω versions. **SPECIFICATIONS:** Temperature Range: -200°C to +260°C (-320°F to +500°F); TFE Teflon wire leads. -75°C to +540°C (-100°F to +1000°F); Fiberglass wire leads. Sensing Element: 375 Platinum, 1000Ω, .00375 ohm/ohm/°C, 385 Platinum, 100Ω, .00385 ohm/ohm/°C, per DIN 43760. Ice Point Resistance, R₀: 1000 ±2 ohm (±0.2%); ±0.1 ohm (±0.1%) optional. 100 min>0.2 ohm (±0.2%); ±0.1 ohm (±0.1%) optional. Interchangeability: ±5°C or 0.8% of temp. at ±0.2% R₀ trim. ±3°C or 0.6% of temp. at ±0.1% R₀ trim optional. Time Constant, 1/e: Typically < 0.5 seconds at 0.085 O.D. in water @ 3ft/sec. Self Heating: Typically < 15mW/°C. Stability: Better than .25°C/yr; <0.05°C/yr in occupied environments. Insulation Resistance: >50 Megohms at 50 VDC at 25°C. Current: 2 mA or less recommended for minimal self heating. Case Material: High purity Alumina. Potting Material: Epoxy (teflon leads) or ceramic (fiberglass leads). Lead Material: Nickel coated stranded copper, teflon or fiberglass insulated.

Cat. No.	Net Price
HEL705-T-0-12-00	\$24.10
HEL705-T-1-12-00	26.03
HEL705-U-0-12-00	17.84
HEL705-U-1-12-00	19.77
HEL707-T-0-12-00	24.10
HEL707-U-0-12-00	17.84
HEL711-T-0-12-00	29.89
HEL711-U-0-12-00	24.59
HEL711-U-1-12-00	26.51
HEL712-T-1-12-00	31.82
HEL712-U-0-12-00	24.59
HEL716-T-0-12-00	27.96
HEL716-T-1-12-00	29.89
HEL716-U-0-12-00	21.69
HEL717-U-0-12-00	21.69
HEL717-U-1-12-00	23.62



Ordering Information

IH-3602, IC Humidity/Temperature Sensor

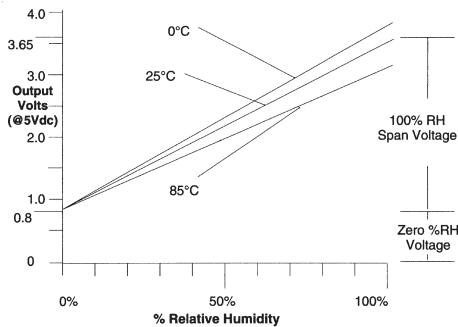
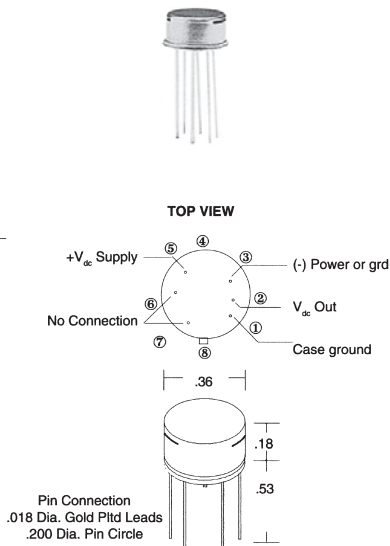
Basic Model	Description
HIH-3602-A	Monolithic IC humidity sensor with integral thermistor in TO-5 can
HIH-3602-C	Monolithic IC humidity sensor with integral precision RTD in TO-5 can

IC HUMIDITY/TEMPERATURE SENSOR HIH-3602-A, -C SERIES

FEATURES: Ready to use design. Linear voltage output data supplied. Contamination resistant plus filter. Monolithic IC reliability. Temperature sensor included. Static protection. **SPECIFICATIONS:** Total Accuracy: ±2% RH, 0-100% RH* @ 25°C and 5 Vdc, non-condensing. Operating Temperature: -40 to 85°C (-40 to 185°F). Hysteresis: ±0.8% of span maximum. Linearity: ±0.5% RH typical. Repeatability: ±0.5% RH. Time Constant: 50 seconds in slowly moving air at 25°C. Humidity Stability: ±1% RH typical at 50% RH in 5 years. Factory Calibration: Calibration data supplied at 0% RH and 75.3% RH at 25°C. Temperature Compensation: Correct RH = sensor RH reading/(1.093-.00121) where: T = °F. Temp. Effect on 0% RH Voltage: ±0.007% RH/°C (negligible). Temp. Effect on 100% Span Voltage: -.22% RH/°C (<1% RH effect typical above 15°C (59°F) for dew points below 24°C (75°F)). Temp. Effect with Analog Compensation: IH-3602-A: <±0.05% RH/°C using integral thermistor above R_t. IH-3602-C: <±1% RH over the full range of 0-85°C (32-185°F). Integral Temperature Sensor: IH-3602-A: 100 KOhm ±5% @ 25°C, NTC; 0-50°C Beta = 4143 K; R_t = 100,000 exp. [4143(1/T-1/298.15)]; where T = °K = 273.15 + °C. IH-3602-C: 1000 Ohm ±0.2% @ 0°C, Alpha = .00375 Ohm/Ohm/°C, thin film platinum RTD. Output: V_{dCout} = (V_{dCsupply}) (0.16 to 0.8) nominal relative to supply negative for 0-100% RH; i.e., 1-5 V_{dCout} for 6.3 V_{dCsupply}; 0.8-4 V_{dCout} for 5 V_{dCsupply}; Sink capability 50 microamps; drive capability 5 microamps typical; low pass 1 KHz filter required turn on time <0.1 sec to full output. Supply Voltage Requirement: 4 to 9 Vdc, regulated or use output/supply ratio; calibrated at 5 Vdc. Current Requirement: 200 microamps typical at 5 Vdc, increases to 2 mA typical at 9 Vdc. Handling: Observe precautions for handling electrostatic sensitive devices; not warranted against damage, protected to 15 KV max. Sensor Housing: Siz pin TO-5 with integral 50m stainless steel hydrophobic filter, resists external condensation. 1.3 grams weight nominal.

*Extended exposure to ≥90% RH causes a reversible shift of approximately 3%.

Cat. No.	Net Price
HIH-3602-A	\$106.96
HIH-3602-C	93.45



Ordering Information

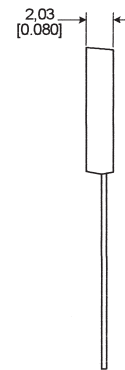
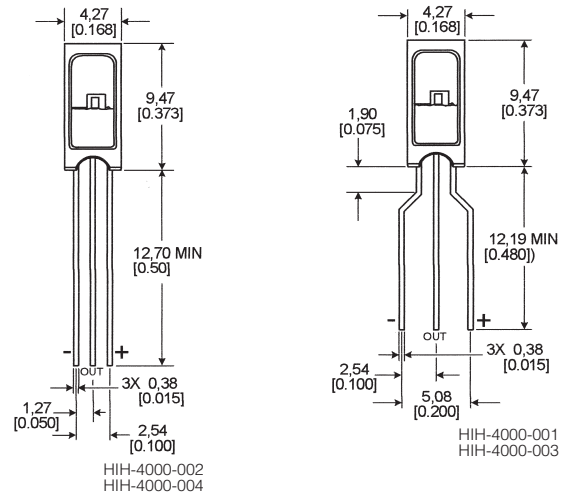
Model Number	Description
HIH-3602-L	Integrated circuit humidity sensor in TO-39 can.
Code 1 Calibration Option	
-CP	Calibration printout.

IC HUMIDITY SENSOR IH-3602-L SERIES

FEATURES: Superb interchangeability. Unsurpassed quality. Ultra reliability. Linear signal, low drain. OEM perfection. Static protection. Fast delivery. **SPECIFICATIONS:** Total Accuracy: $\pm 2\%$ RH, 0-100% RH* @ 25°C and 5Vdc, non-condensing. Interchangeability: $\pm 5\%$ RH up to 60% RH, $\pm 8\%$ RH at 90% RH (typical). Operating temperature: -40 to 85°C (-40 to 185°F). Hysteresis: $\pm 0.8\%$ of span maximum. Linearity: $\pm 0.5\%$ RH typical. Repeatability: 30 seconds in slowly moving air at 25°C. Time Constant: $\pm 1\%$ RH typical at 50% RH in 5 years. Humidity stability: $\pm 0.5\%$ RH. Temperature Compensation: Correct RH = sensor RH reading / (1.093 - .0012T); where: T = °F. Temp. Effect on 0% RH Voltage: $\pm 0.007\%$ RH/°C (negligible). Temp. Effect on 100% Span Voltage: $-.22\%$ RH/°C (<1% RH effect typical in occupied space systems above 15°C) Output: $V_{dc\ out} = V_{dc\ supply}$ (0.16 to 0.78) nominal relative to supply negative for 0-100% RH; i.e. 1-4.9 Vdc out for 6.3 Vdc supply; 0.8-3.9 Vdc out for 5 Vdc supply; Sink capability 50 microamps; drive capability 5 microamps typical; low pass 1kHz filter required. Turn on time <0.1 sec. to full output. Vs, Supply Voltage Requirement: 4 to 9 Vdc, regulated or use output/supply ratio; calibrated at 5 Vdc. Current requirement: 200 microamps typical @ 5 Vdc, increases to 2 mA typical at 9 Vdc. Handling: Observe precautions for handling electrostatic sensitive devices; not warranted against electrostatic damage. Protected to 15 KV max. Sensor Housing: Six pin TO-39 with slotted nickel cap. Shade slots from intense light. 0.8 grams weight nominal.

*Extended exposure to $\geq 90\%$ RH causes a reversible shift of approximately 3%.

Cat. No.	Net Price
HIH-3602-L	\$56.63



IC HUMIDITY/MOISTURE SENSOR HIH-4000 SERIES

The HIH-4000 Series humidity sensor is designed specifically for high volume OEM (Original Equipment Manufacturer) users. Direct input to a controller or other device is made possible by this sensor's linear voltage output. With a typical current draw of only 200µA, the HIH-4000 Series is ideally suited for low drain, battery operated systems. Tight sensor interchangeability reduces or eliminates OEM production calibration costs. Individual sensor calibration data is available. The HIH-4000 Series delivers instrumentation-quality RH (Relative Humidity) sensing performance in a low cost, solderable SIP (Single In-line Package). Available in two lead spacing configurations, the RH sensor is a laser trimmed thermoset polymer capacitive element with on-chip integrated signal conditioning. The sensing element's multilayer construction provides excellent resistance to application hazards such as wetting, dust, dirt, oil, and common environmental chemicals. **FEATURES:** Molder thermoset plastic housing. Linear voltage output vs %RH. Laser trimmed interchangeability. Low power design. High accuracy. Fast response time. Stable, low drift performance. Chemically resistant. **TYPICAL APPLICATIONS:** Refrigeration equipment. HVAC equipment. Medical equipment. Drying. Metrology. Battery-powered system. OEM assemblies. **SPECIFICATIONS:** Hysteresis: 3% RH. Repeatability: $\pm 0.5\%$ RH. Setting time: 70mS. Response time (1/e in slow moving air); 15 Sec. Stability (@50% RH in 1 year); $\pm 1.2\%$ RH (specification includes testing outside of recommended operating zone). (specification includes testing outside of recommended operating zone). Stability (@ 50% RH): TBD% RH (specification for recommended operating zone only). Voltage output (1st order fit): $V_{out} = V_{supply}$ 0.0062 (sensor RH) + 0.16). Voltage output (2nd order curve fit): $V_{out} = 0.00003$ (sensor RH)² + 0.0281 (sensor RH) + 0.820 typical @ 25°C. Operating temperature: -40°C to 85°C (-40°F to 185°F).

Cat. No.	Description	Net Price
HIH-4000-001	Integrated circuitry humidity sensor, 0.100 in lead pitch SIP	\$24.79
HIH-4000-002	Integrated circuitry humidity sensor, 0.050 in lead pitch SIP	24.79
HIH-4000-003	Integrated circuitry humidity sensor, 0.100 in lead pitch SIP with calibration and data printout.	27.55
HIH-4000-004	Integrated circuitry humidity sensor, 0.050 in lead pitch SIP with calibration and data printout.	27.55