

### Ordering Information

Base Model	Lead Insulation	Sheath Diameter	Sheath Length
HEL-705	28 ga. TFE Teflon, 2-Wire Only	.085"	.187"
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

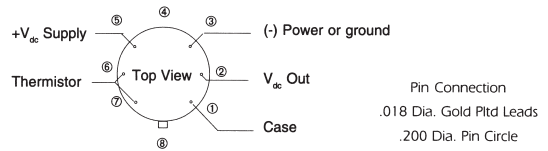
  

Code 3	Lead Wire Length
-NN	NN = Inches, 12" Standard

### 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, R<sub>0</sub>: 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% R<sub>0</sub> trim. ±3°C or 0.6% of temp. at ±0.1% R<sub>0</sub> 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

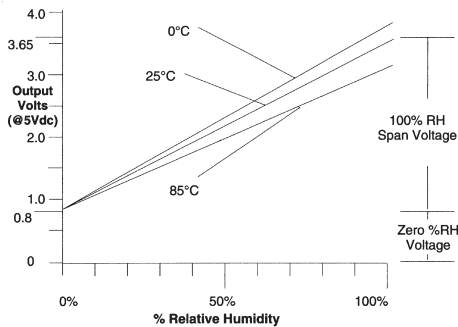
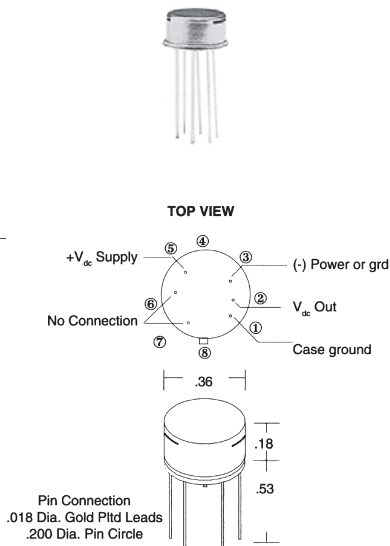
Basic Model	Description
HIH-3602-A	Monolithic IC humidity sensor with integral thermistor in TO-5 can
HIH-3602-C	Monolithic IC humidity sensor with integral precision RTD in TO-5 can

### 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<sub>t</sub>. 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<sub>t</sub> = 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<sub>dCout</sub> = (V<sub>dCsupply</sub>) (0.16 to 0.8) nominal relative to supply negative for 0-100% RH; i.e., 1-5 V<sub>dCout</sub> for 6.3 V<sub>dCsupply</sub>; 0.8-4 V<sub>dCout</sub> for 5 V<sub>dCsupply</sub>; 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

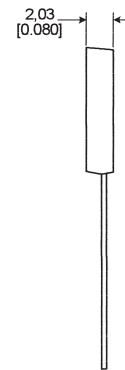
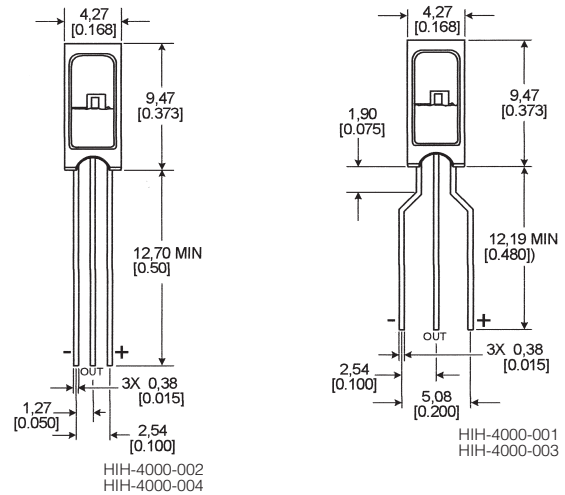
Model Number	Description
HIH-3602-L	Integrated circuit humidity sensor in TO-39 can.
<b>Code 1 Calibration Option</b>	
-CP	Calibration printout.

### 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%.

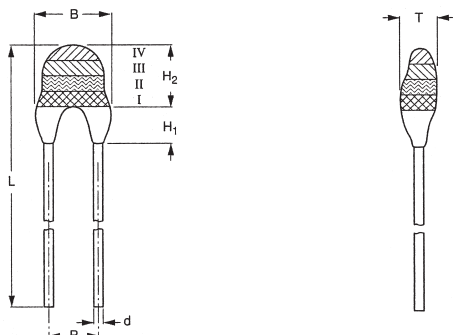
Cat. No.	Net Price
HIH-3602-L	\$56.63



### 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)<sup>2</sup> + 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



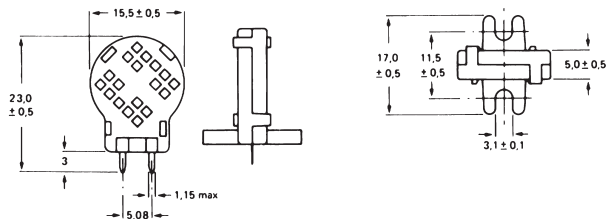
## VISHAY/BC COMPONENTS ACCURACY LINE NTC THERMISTORS

**FEATURES:** Accuracy over a wide temperature range. High stability over a long life. Excellent price/performance ratio. **APPLICATIONS:** Temperature sensing and control. **SPECIFICATIONS:** Max. dissipation: 500mW. Dissipation factor: 7mW/K/responsetime: 1.2 s. Operating temperature range: -40 to +125°C, at 500mW—o to +55°C. Climatic category: 40/125/56.

### DIMENSIONS TABLE (MM)

Code Number 2381 640	B <sub>max</sub>	d	H <sub>1</sub>		H <sub>2</sub> Max.	L	P	T <sub>max</sub>
			Min.	Max.				
6.331 to 6.474	5.0	0.6 ±0.06	1.0	4.0	6.0	24 ±1.5	2.45	4.0
6.331 to 6.474	3.3 ±0.5	0.6 ±0.06	—	2.0 ±1.0	6.0	24 ±1.5	2.45	3.0

Cat. No.	Ohms	L.S.	B <sub>25/85</sub> -<E> Value	Net Price
2381 640 63101	100R	2.5	3560 K ±0.75%	<b>\$1.20</b>
2381 640 63471	470R	2.5	3560 K ±0.50%	<b>1.05</b>
2381 640 63102	1K	2.5	3528 K ±0.50%	<b>1.20</b>
2381 640 63222	2K2	2.5	3977 K ±0.75%	<b>1.20</b>
2381 640 63332	3K3	2.5	3977 K ±0.75%	<b>1.05</b>
2381 640 63472	4K7	2.5	3977 K ±0.75%	<b>1.20</b>
2381 640 63103	10K	2.5	3977 K ±0.75%	<b>.50</b>
2381 640 63223	22K	2.5	3740 K ±2%	<b>1.20</b>
2381 640 63333	33K	2.5	4090 K ±1.5%	<b>1.05</b>
2381 640 63473	47K	2.5	4090 K ±1.5%	<b>1.23</b>
2381 640 63104	100K	2.5	4190 K ±1.5%	<b>1.20</b>
2381 640 63224	220K	2.5	4370 K ±2.5%	<b>1.20</b>
2381 640 63334	330K	2.5	4570 K ±1.5%	<b>1.20</b>
2381 640 63474	470K	2.5	4570 K ±1.5%	<b>1.20</b>



## BC COMPONENTS 691-90001 HUMIDITY SENSOR

For humidity measurements in electronic hygrometers, laundry dryers with automatic shut-off and self-regulating air humidifiers. This captive atmospheric humidity sensor consists of a non-conductive foil, which is covered with a layer of gold. The dielectric constant of the foil changes as a function of the relative humidity of the ambient atmosphere and, accordingly, the capacitance value of the sensor is a measure of the relative humidity.

Cat. No.	Net Price
691-90001	<b>\$10.38</b>

# GIVING YOU WHAT YOU WANT!



- SPEED
- PRODUCTS
- INFORMATION
- PROCUREMENT
- LINKS

IT'S ALL HERE... [www.e-sonic.com](http://www.e-sonic.com)