

Humidity Sensors

Humidity Sensor

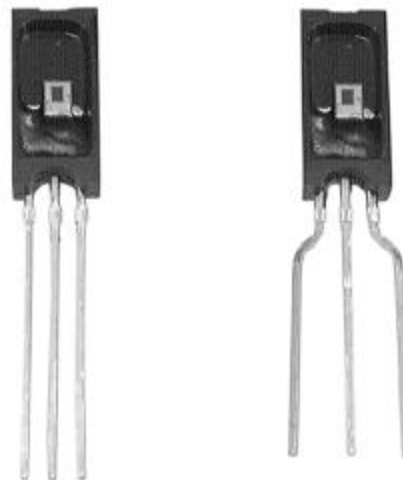
HIH-3610 Series

FEATURES

- Molded thermoset plastic housing with cover
- 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
- Drying
- Metrology
- Battery-powered systems
- OEM assemblies



The HIH-3610 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 200 μ A, the HIH-3610 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-3610 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 sensing element with on-chip integrated signal conditioning. The sensing element's multilayer construction provides excellent resistance to application hazards such as wetting, dust, dirt, oils, and common environmental chemicals.

⚠ 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 product sheet is for reference only. Do not use this document as system 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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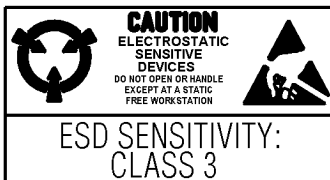
HH-3610 Series

TABLE 1: PERFORMANCE SPECIFICATIONS

Parameter	Condition
RH Accuracy ⁽¹⁾	±2% RH, 0-100% RH non-condensing, 25 °C, V _{supply} = 5 Vdc
RH Interchangeability	±5% RH, 0-60% RH; ±8% @ 90% RH typical
RH Linearity	±0.5% RH typical
RH Hysteresis	±1.2% RH span maximum
RH Repeatability	±0.5% RH
RH Response Time, 1/e	15 sec in slowly moving air at 25 °C
RH Stability	±1% RH typical at 50% RH in 5 years
Power Requirements	
Voltage Supply	4 Vdc to 5.8 Vdc, sensor calibrated at 5 Vdc
Current Supply	200 µA at 5 Vdc
Voltage Output	V _{out} = V _{supply} (0.0062(Sensor RH) + 0.16), typical @ 25 °C (Data printout option provides a similar, but sensor specific, equation at 25 °C.)
V _{supply} = 5 Vdc	0.8 Vdc to 3.9 Vdc output @ 25 °C typical
Drive Limits	Push/pull symmetric; 50 µA typical, 20 µA minimum, 100 µA maximum Turn-on ≤ 0.1 sec
Temperature Compensation	True RH = (Sensor RH)/(1.093-0.0021T), T in °F True RH = (Sensor RH)/(1.0546-0.00216T), T in °C
Effect @ 0% RH	±0.007 %RH/°C (negligible)
Effect @ 100% RH	-0.22% RH/°C (<1% RH effect typical in occupied space systems above 15 °C (59 °F))
Humidity Range	
Operating	0 to 100% RH, non-condensing ⁽¹⁾
Storage	0 to 90% RH, non-condensing
Temperature Range	
Operating	-40 °C to 85 °C (-40 °F to 185 °F)
Storage	-51 °C to 125 °C (-60 °F to 257 °F)
Package ⁽²⁾	Three pin, solderable SIP in molded thermoset plastic housing with thermoplastic cover
Handling	Static sensitive diode protected to 15 kV maximum

Notes:

1. Extended exposure to ≈90% RH causes a reversible shift of 3% RH.
2. This sensor is light sensitive. For best results, shield the sensor from bright light.



Humidity/Moisture Sensors

Humidity Sensor

HIH-3610 Series

FACTORY CALIBRATION

HIH-3610 sensors may be ordered with a calibration and data printout (Table 2). See order guide on back page.

TABLE 2: EXAMPLE DATA PRINTOUT

Model	HIH-3610-001
Channel	92
Wafer	030996M
MRP	337313
Calculated values at 5 V	
V _{out} @ 0% RH	0.958 V
V _{out} @ 75.3% RH	3.268 V
Linear output for 2% RH accuracy @ 25 °C	
Zero offset	0.958 V
Slope	30.680 mV/%RH
RH	$(V_{out}-zero\ offset)/slope$ $(V_{out}-0.958)/0.0307$
Ratiometric response for 0 to 100% RH	
V _{out}	V _{supply} (0.1915 to 0.8130)

FIGURE 1: RH SENSOR CONSTRUCTION

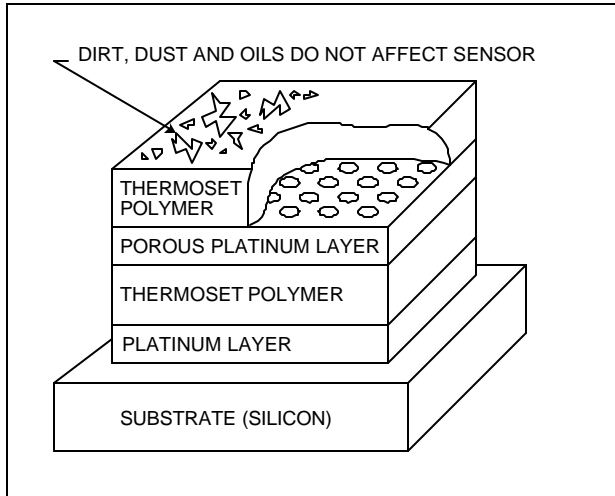


FIGURE 2: OUTPUT VOLTAGE VS RELATIVE HUMIDITY AT 0 °C

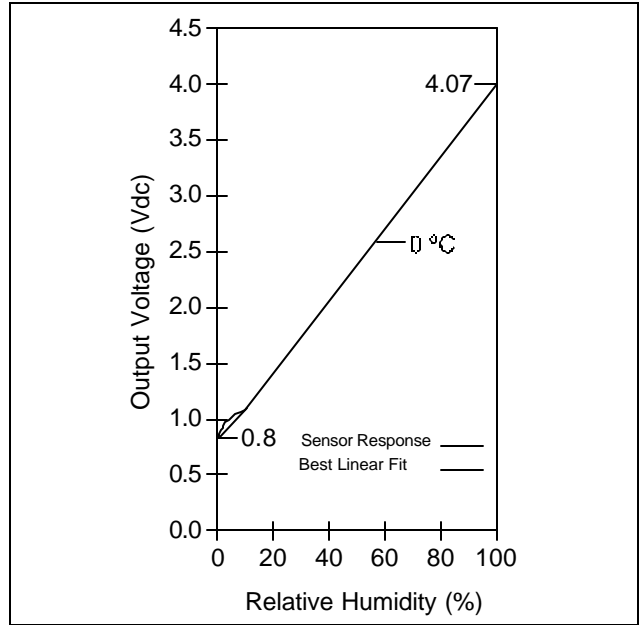
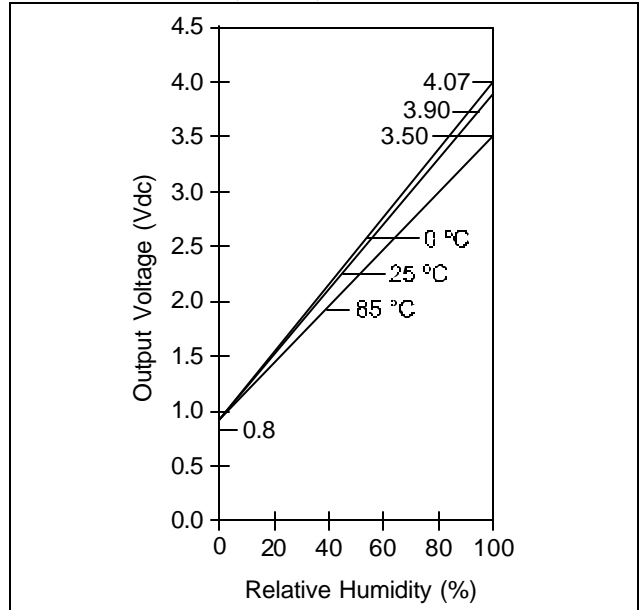


FIGURE 3: OUTPUT VOLTAGE VS RELATIVE HUMIDITY AT 0 °C, 25 °C, 85 °C



Humidity/Moisture Sensors

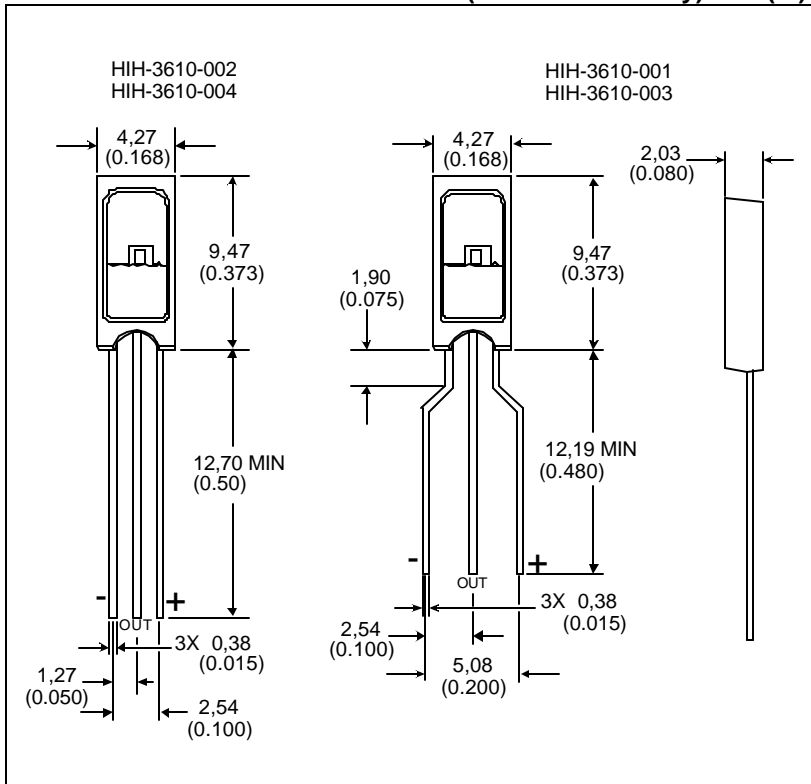
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HIH-3610 Series

ORDER GUIDE

Catalog Listing	Description
HIH-3610-001	Integrated circuit humidity sensor, 0.100 in lead pitch SIP
HIH-3610-002	Integrated circuit humidity sensor, 0.050 in lead pitch SIP
HIH-3610-003	Integrated circuit humidity sensor, 0.100 in lead pitch SIP with calibration and data printout
HIH-3610-004	Integrated circuit humidity sensor, 0.050 in lead pitch SIP with calibration and data printout

FIGURE 4: MOUNTING DIMENSIONS (for reference only) mm (in)



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Honeywell

Sensing and Control
Honeywell
11 West Spring Street
Freeport, Illinois 61032



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