Honeywell Sensing and Control has replaced the PDF product catalog with the new Interactive Catalog. The Interactive Catalog is a power search tool that makes it easier to find product information. It includes more installation, application, and technical information than ever before.

These PDF files are no longer being updated and will be removed by January 2001.
**Humidity Sensors**

**Relative Humidity**

**HIH Series**

**FEATURES**
- 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
- Meteorology
- Battery-powered systems
- OEM assemblies

**GENERAL INFORMATION**

The HIH-3605 monolithic IC (Integrated Circuit) 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 μA, the HIH-3605 is ideally suited for low drain, battery powered systems.

The HIH-3605 delivers instrumentation quality RH 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.

**ORDER GUIDE**

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<th>Catalog Listing</th>
<th>Description</th>
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<tr>
<td>HIH-3605-A</td>
<td>Integrated circuit humidity sensor, 0.100 in. lead pitch SIP</td>
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<tr>
<td>HIH-3605-A-CP</td>
<td>Integrated circuit humidity sensor, 0.100 in. lead pitch SIP with calibration and data printout</td>
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<tr>
<td>HIH-3605-B</td>
<td>Integrated circuit humidity sensor, 0.050 in. lead pitch SIP</td>
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<tr>
<td>HIH-3605-B-CP</td>
<td>Integrated circuit humidity sensor, 0.050 in. lead pitch SIP with calibration and data printout</td>
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**NIST CALIBRATION**

HIH-3605 sensors may be ordered with a NIST calibration and sensor specific data printout. Append “−CP” to the model number to order.

**RH SENSOR CONSTRUCTION**

Sensor construction consists of a planar capacitor with a second polymer layer to protect against dirt, dust, oils and other hazards.

**CAUTION**

**PRODUCT DAMAGE**

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation, take normal ESD precautions when handling this product.
## PERFORMANCE SPECIFICATIONS

<table>
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<th>Parameter</th>
<th>Conditions</th>
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<tr>
<td>RH Accuracy(1)</td>
<td>±2% RH, 0-100% RH non-condensing, 25°C, ( V_{\text{supply}} = 5 ) VDC</td>
</tr>
<tr>
<td>RH Interchangeability</td>
<td>±5% RH, 0-60% RH; ±8% @ 90% RH typical</td>
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<tr>
<td>RH Linearity</td>
<td>±0.5% RH typical</td>
</tr>
<tr>
<td>RH Hysteresis</td>
<td>±1.2% of RH span maximum</td>
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<tr>
<td>RH Repeatability</td>
<td>±0.5% RH</td>
</tr>
<tr>
<td>RH Response Time, 1/e</td>
<td>15 sec in slowly moving air at 25°C</td>
</tr>
<tr>
<td>RH Stability</td>
<td>±1% RH typical at 50% RH in 5 years</td>
</tr>
</tbody>
</table>

### Power Requirements

- **Voltage Supply**: 4 to 5.8 VDC, sensor calibrated at 5 VDC
- **Current Supply**: 200 μA at 5 VDC, 2 mA typical at 9 VDC

### Voltage Output

- \( V_{\text{out}} = V_{\text{supply}} \times (0.0062 \times \text{Sensor RH} + 0.16) \), typical @ 25°C
  (Data printout provides a similar, but sensor specific, equation at 25°C.)

### Drive Limits

- Push/pull symmetric; 50 μA typical, 20 μA minimum, 100 μA maximum
- Turn-on \( \leq 0.1 \) second

### Temp. Compensation

- True RH = \( \left( \text{Sensor RH} \right) / \left( 1.093 - 0.0012T \right) \), T in °F
- True RH = \( \left( \text{Sensor RH} \right) / \left( 1.0546 - 0.00216T \right) \), T in °C
- ±0.007% RH/°C (negligible)
- Effect @ 0% 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**: \(-40°\) to 85°C \((-40°\) to 185°F)
- **Storage**: \(-51°\) to 125°C \((-60°\) to 257°F)

### Package(2)

- Three pin solderable ceramic SIP

### Handling

- Static sensitive diode protected to 15 kV maximum

### Output Voltage vs Relative Humidity

**Output Voltage vs Relative Humidity (at 0°C)**

![Graph](image1)

**Output Voltage vs Relative Humidity (at 0°C, 25°C, and 85°C)**

![Graph](image2)

**Notes:**

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