

## Installation Instructions for the HIH-4602-A/C Series Humidity Sensors

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### 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.
- The sensor's housing does not provide electrical safety isolation. Mount the sensor in a location where it cannot be touched, or where a surrounding barrier prevents human contact.

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

### CAUTION

#### IMPROPER HANDLING

- Do not remove the sensor from its original protective packaging until it is ready to be installed.
- Do not touch the sensor surface. Use latex finger cots. Handle the sensor by its package edges or leads.
- Do not allow objects to enter the cavity of the sensor element.

**Failure to comply with these instructions may result in product damage.**

### NOTICE

- Under condensing conditions where enough liquid water forms on the sensor to create a parasitic leakage path, the HIH-4602-A/C Series Humidity Sensor produces an erroneous reading of 0% humidity. If this erroneous reading is assumed to be correct by your control function, excess humidity is likely to be introduced into the system. Once the liquid water evaporates from the sensor and the environment returns to a non-condensing state, the device returns to normal functionality.
- Shade the sensor from direct light. Intense direct light can flood junctions in the CMOS (Complementary Metal Oxide Semiconductor) device and drive the output signal to the minimum. This does not harm the sensor or affect calibration. Proper operation resumes shortly after the direct light is removed. Ambient scattered light normally does not affect performance.
- At the end of its working life, dispose the sensor in accordance with Directive 2002/96/EC (WEEE).

### CAUTION

#### IMPROPER SENSOR POSITIONING

- Position the sensor so that its face is exposed to the atmosphere being monitored.

**Failure to comply with these instructions may result in product damage.**

Hand soldering is acceptable. If wave soldering is required, use a no-clean flux. Limit the contact of the flux to the leads only.

Recommended PC board wave soldering temperature is 250 °C to 260 °C [482 °F to 500 °F].

#### MOISTURE SEALING THE LEADS

If, in the presence of intermittent moisture or other contaminants, there is the possibility of galvanic paths between the leads, moisture seal the leads and exposed pads.

**TABLE 1. HIH-4602-A NTC THERMISTOR TEMPERATURE SPECIFICATIONS**

Rb = 100 kOhm ±5% at 25 °C		
Beta = 4250, 25 °C to 85 °C		
1/T = a + b(Ln R) + c(Ln R) ^ 3, T in degrees K		
	<b>Temp. °C</b>	<b>Resistance</b>
Low	0	351000
Mid	50	33590
High	100	5569
a = 0.000828083		
b = 0.000208691		
c = 8.0812E-08		

**TABLE 2. HIH-4602-C RTD TEMPERATURE SENSOR SPECIFICATIONS**

Thin film platinum RTD – Class 2B (Ro: ±0.25%)
DIN EN 60571 (PER IEC 751)
TCR = 3750 ppm/°C
1000 Ohm at 0 °C [32 °F]



**TABLE 3. PERFORMANCE SPECIFICATIONS (At 5 Vdc supply and 25 °C [77 °F] unless otherwise noted.)**

Parameter	Minimum	Typical	Maximum	Unit	Specific Note
Interchangeability (first order curve)	–	–	–	–	–
0% RH to 59% RH	-5	–	5	% RH	–
60% RH to 100% RH	-8	–	8	% RH	–
Accuracy (best fit straight line)	-3.5	–	+3.5	% RH	1
Hysteresis	–	3	–	% RH	–
Repeatability	–	±0.5	–	% RH	–
Settling time	–	–	70	ms	–
Response time (1/e in slow moving air)	–	50	–	s	–
Stability (at 50% RH in one year)	–	±1.2	–	% RH	–
Voltage supply	4	–	5.8	Vdc	–
Current supply	–	200	500	µA	–
Output voltage temperature coefficient at 50% RH, 5 V	–	-4	–	mV/°C	–
Voltage output (1st order curve fit)	$V_{OUT}=(V_{SUPPLY})(0.0062(\text{sensor RH}) + 0.16)$ , typical at 25 °C				1
Temperature compensation	True RH = (sensor RH)/(1.0546-0.00216T), T in °C				
Operating temperature	-40[-40]	See Figure 1.	85[185]	°C[°F]	–
Operating humidity	0	See Figure 1.	100	% RH	2
Storage temperature	-50[-58]	–	125[257]	°C[°F]	–
Storage humidity	See Figure 2.			% RH	2

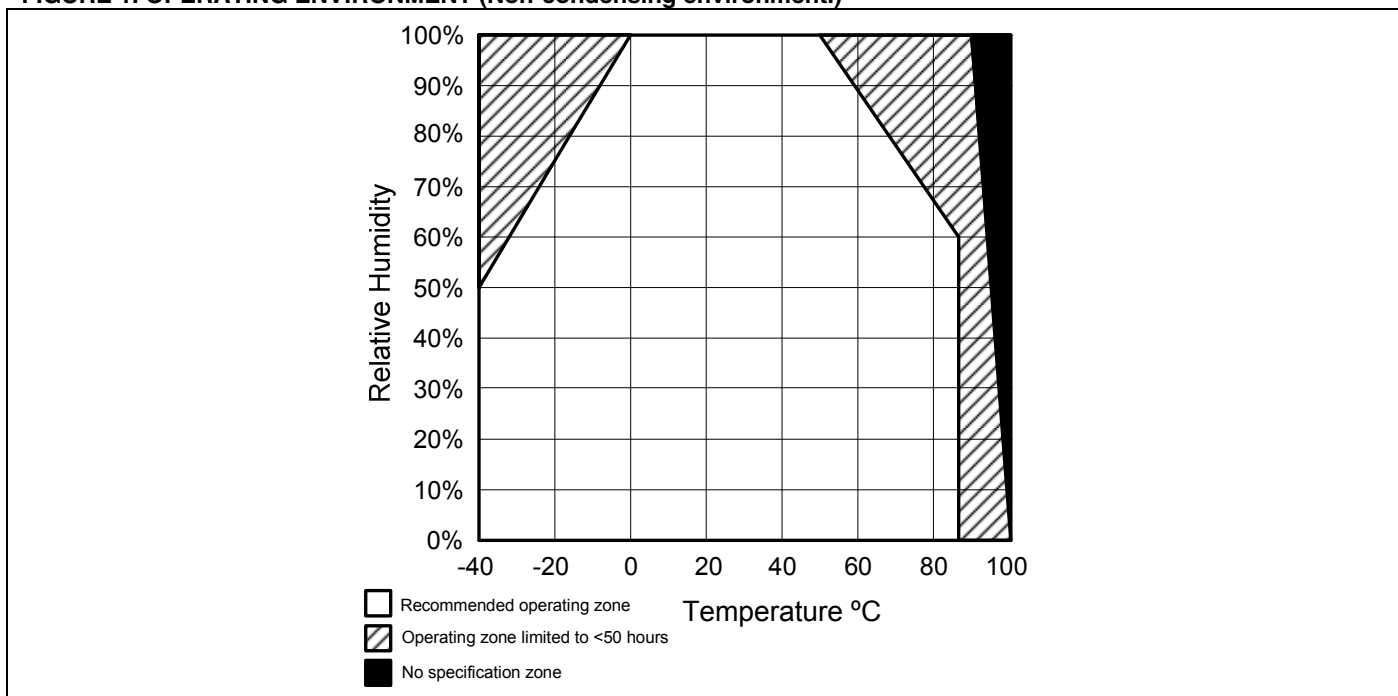
**Specific Notes:**

1. Device is calibrated at 5 Vdc and 25 °C.
2. Non-condensing environment.

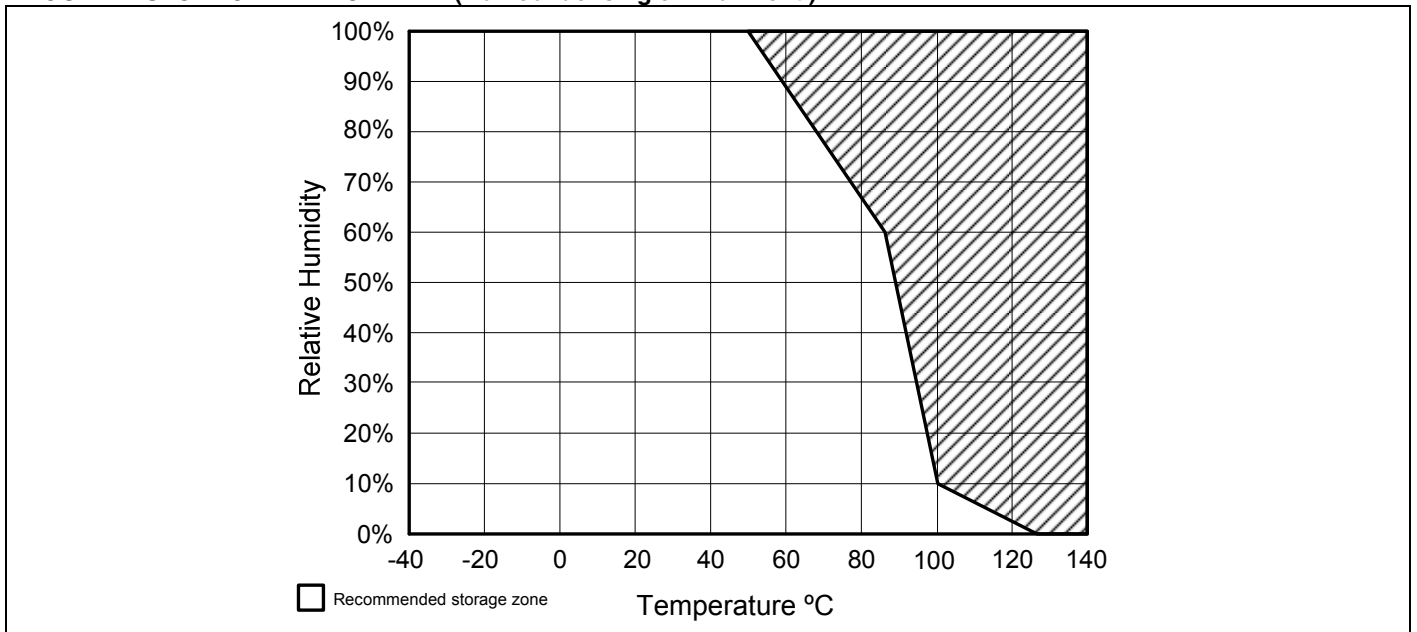
**General Notes:**

- Sensor is ratiometric to supply voltage.
- Extended exposure to ≥90% RH causes a reversible shift of 3% RH.
- Sensor is light sensitive. For best performance, shield sensor from bright light.

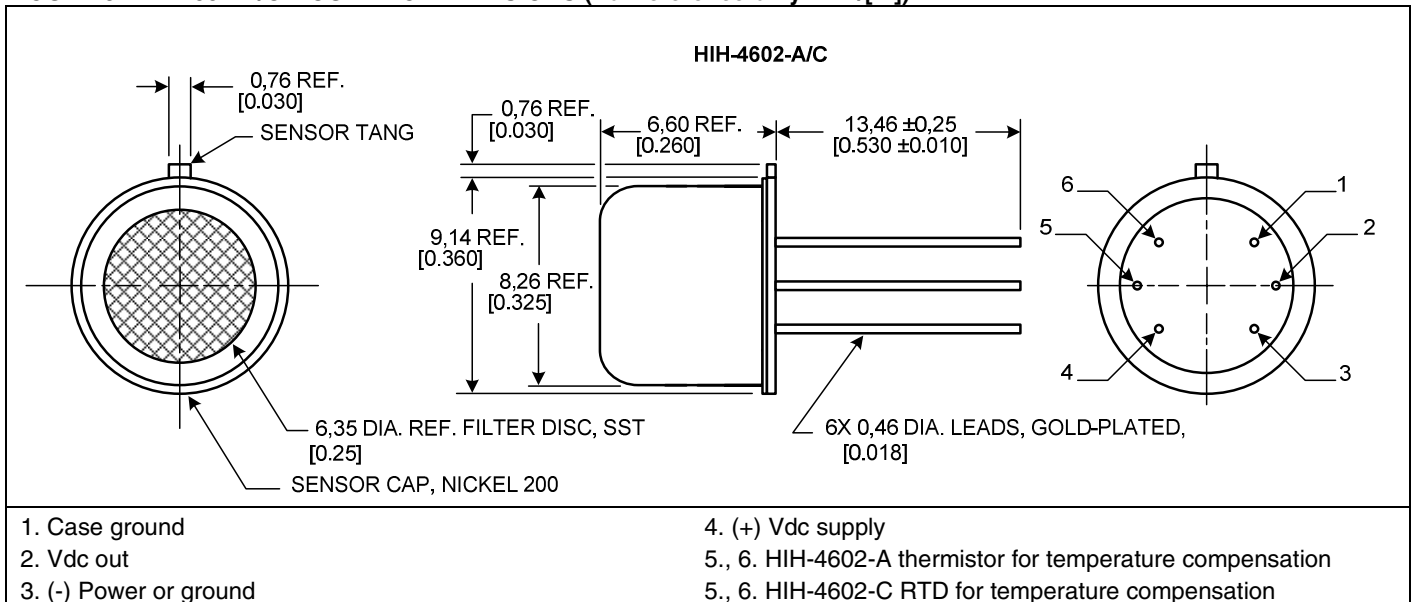
**FIGURE 1. OPERATING ENVIRONMENT (Non-condensing environment.)**



**FIGURE 2. STORAGE ENVIRONMENT (Non-condensing environment.)**



**FIGURE 3. HIH-4602-A/C MOUNTING DIMENSIONS (For reference only. mm/[in])**



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**Internet:** [www.honeywell.com/sensing](http://www.honeywell.com/sensing)

### Phone and Fax:

Asia Pacific	+65 6355-2828
	+65 6445-3033 Fax
Europe	+44 (0) 1698 481481
	+44 (0) 1698 481676 Fax
Latin America	+1-305-805-8188
	+1-305-883-8257 Fax
USA/Canada	+1-800-537-6945
	+1-815-235-6847
	+1-815-235-6545 Fax

## Automation and Control Solutions

Sensing and Control

Honeywell

1985 Douglas Drive North

Minneapolis, MN 55422

[www.honeywell.com/sensing](http://www.honeywell.com/sensing)

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