TABLE 1. PERFORMANCE SPECIFICATIONS (At 5 Vdc supply and 25 ºC [77 ºF] 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
Hysterisis	–	3	–	% RH	–
Repeatability	–	±0.5	–	% RH	–
Settling time	–	–	70	ms	–
Response time (1/e in slow moving air)	–	5	–	s	–
Stability (at 50 %RH in 1 year)	–	±1.2	–	% RH	2
Stability (at 50 %RH in 1 year)	–	±0.5	–	% RH	3
Voltage supply	4	–	5.8	Vdc	4
Current supply	–	200	500	µA	–
Voltage output (1st order curve fit)	$V_{OUT}=(V_{SUPPLY})(0.0062(\text{sensor RH}) + 0.16)$, typical at 25 ºC				
Temperature compensation	True RH = (Sensor RH)/(1.0546 – 0.00216T), T in ºC				
Output voltage temp. coefficient at 50% RH, 5 V	–	-4	–	mV/ºC	–
Operating temperature	-40[-40]	See Figure 1.	85[185]	ºC[ºF]	–
Operating humidity (HIH-4010)	0	See Figure 1.	100	% RH	5
Operating humidity (HIH-4020)	0	See Figure 1.	100	% RH	5
Operating humidity (HIH-4021)	0	See Figure 1.	100	% RH	–
Storage temperature	-50[-58]	–	125[257]	ºC[ºF]	–
Storage humidity	See Figure 2.			% RH	5

Specific Notes:

1. For HIH-4010/20/21-003/004 catalog listings only.
2. Includes testing outside of recommended operating zone.
3. Includes testing for recommended operating zone only.
4. Device is calibrated at 5 Vdc and 25 ºC.
5. Non-condensing environment. When liquid water falls on the humidity sensor die, output goes to a low rail condition indicating no humidity.

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.

FACTORY CALIBRATION DATA

HIH-4010/4020/4021 Sensors may be ordered with a calibration and data printout. See Table 2 and the order guide on the back page.

TABLE 2. EXAMPLE DATA PRINTOUT

Model	HIH-4010-003
Channel	92
Wafer	030996M
MRP	337313
Calculated values at 5 V V_{OUT} at 0% RH V_{OUT} at 75.3% RH	 0.958 V 3.268 V
Linear output for 3.5% RH accuracy at 25 °C Zero offset Slope Sensor RH	 0.958 V 30.680 mV/%RH (V_{OUT} - zero offset)/slope (V_{OUT} - 0.958)/0.0307
Ratiometric response for 0% RH to 100% RH V_{OUT}	 V_{SUPPLY} (0.1915 to 0.8130)

For HIH-4010-001/002/003/004 catalog listings only.

For HIH-4020-001/002/003/004 and HIH-4021-001/002/003/004 catalog listings only.

FIGURE 1. OPERATING ENVIRONMENT (Non-condensing environment for HIH-4010 and HIH-4020 catalog listings only.)

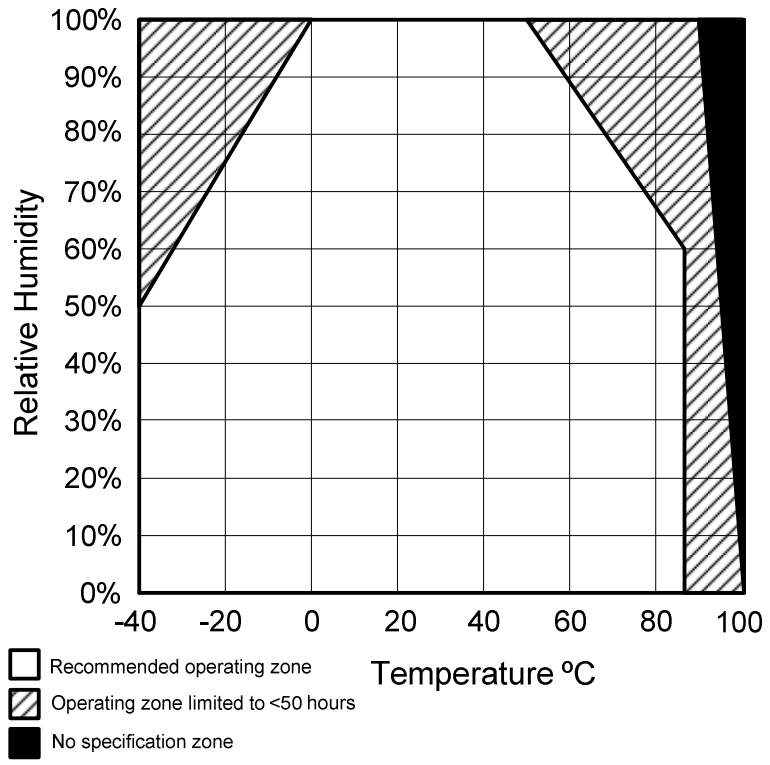


FIGURE 2. STORAGE ENVIRONMENT (Non-condensing environment for HIH-4010 and HIH-4020 catalog listings only.)

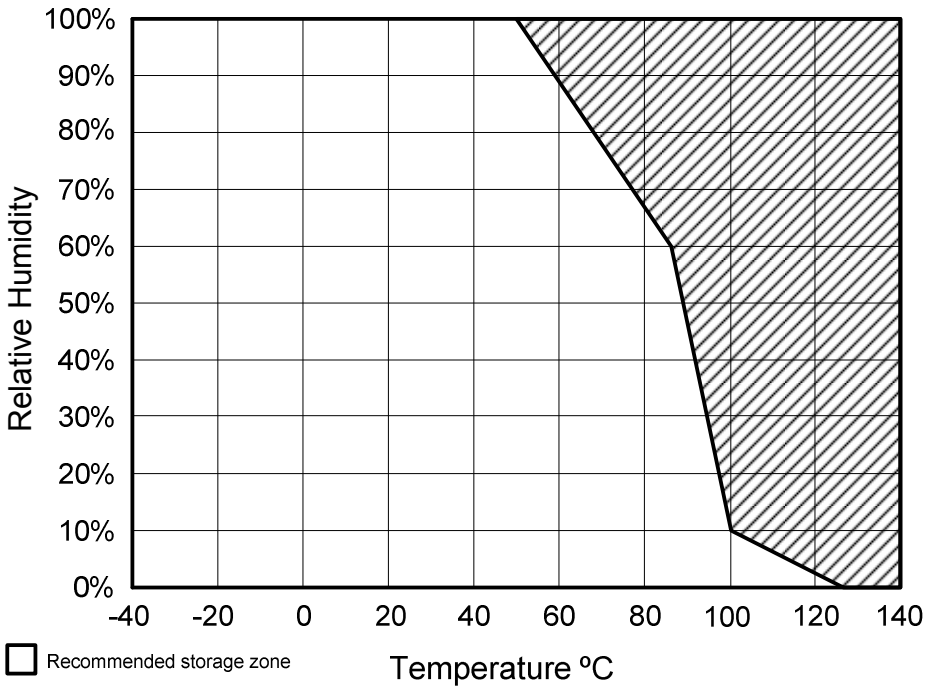


FIGURE 3. TYPICAL OUTPUT VOLTAGE VS RELATIVE HUMIDITY (At 25 ºC and 5 V.)

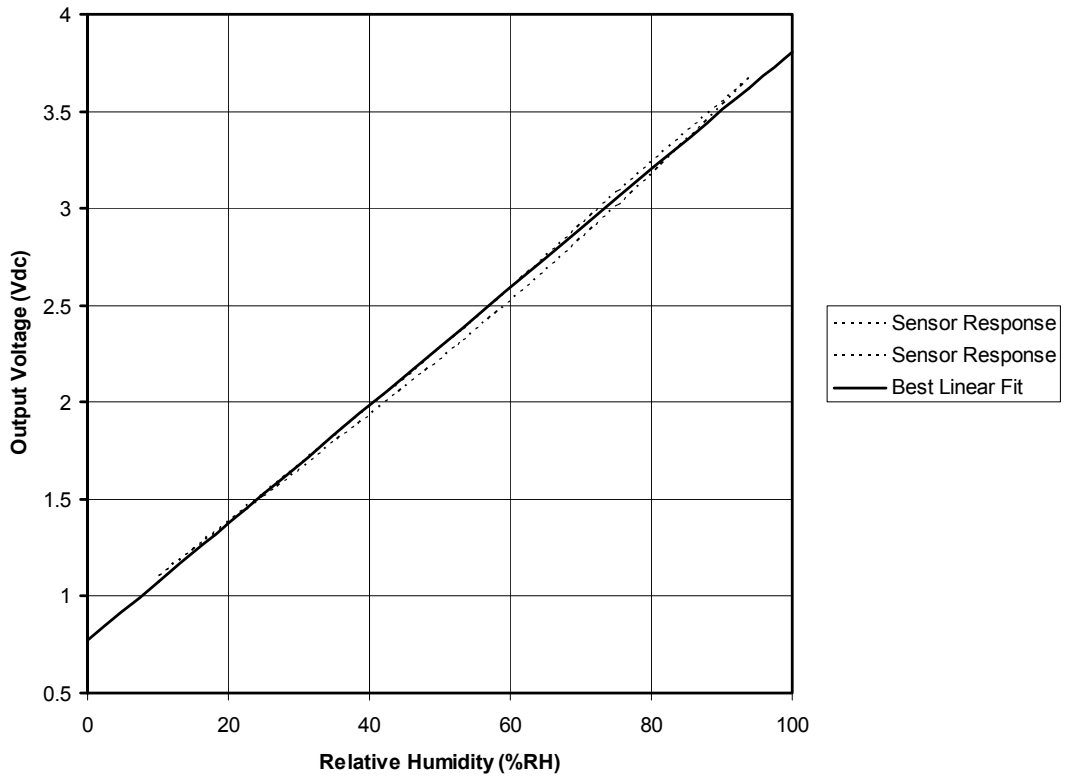


FIGURE 4. TYPICAL OUTPUT VOLTAGE (BFSL) VS RELATIVE HUMIDITY (At 0 ºC, 70 ºC and 5 V.)

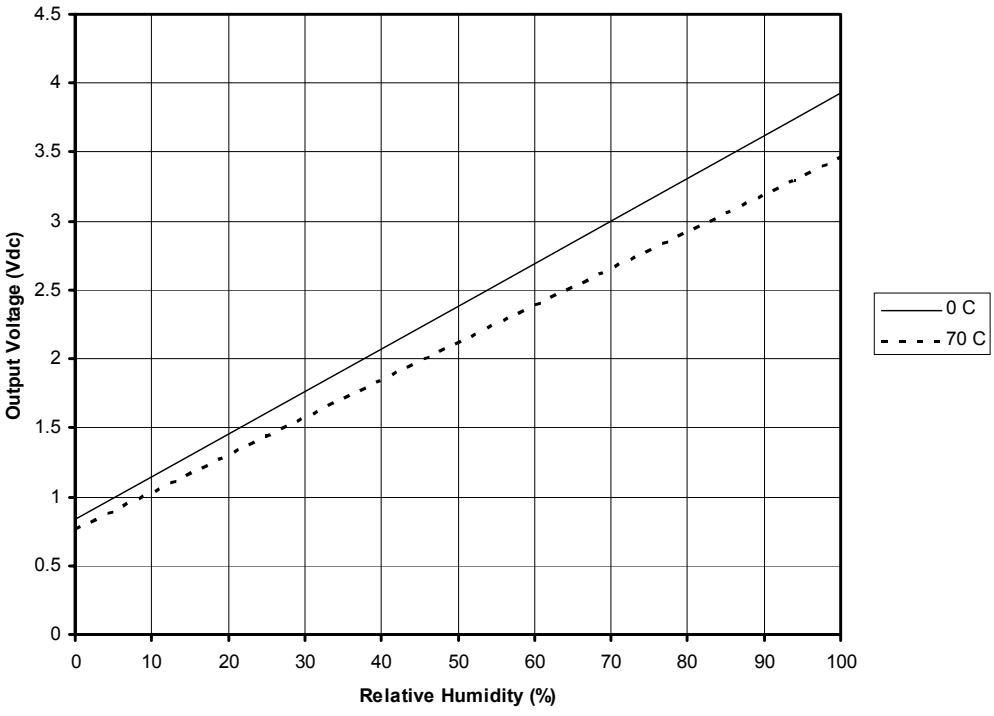


FIGURE 5. HIH-4010 MOUNTING DIMENSIONS (For reference only. mm/[in])

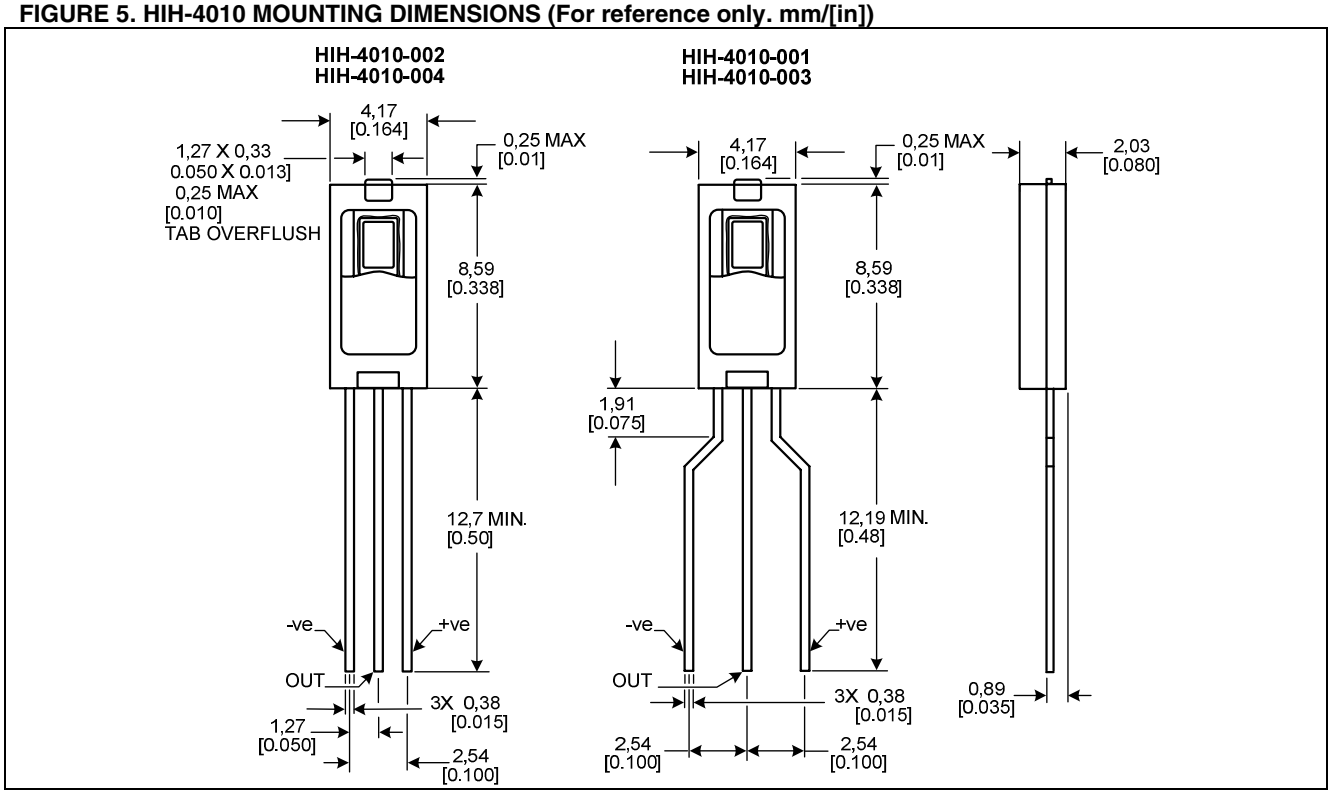


FIGURE 6. HIH-4020 MOUNTING DIMENSIONS (For reference only. mm/[in])

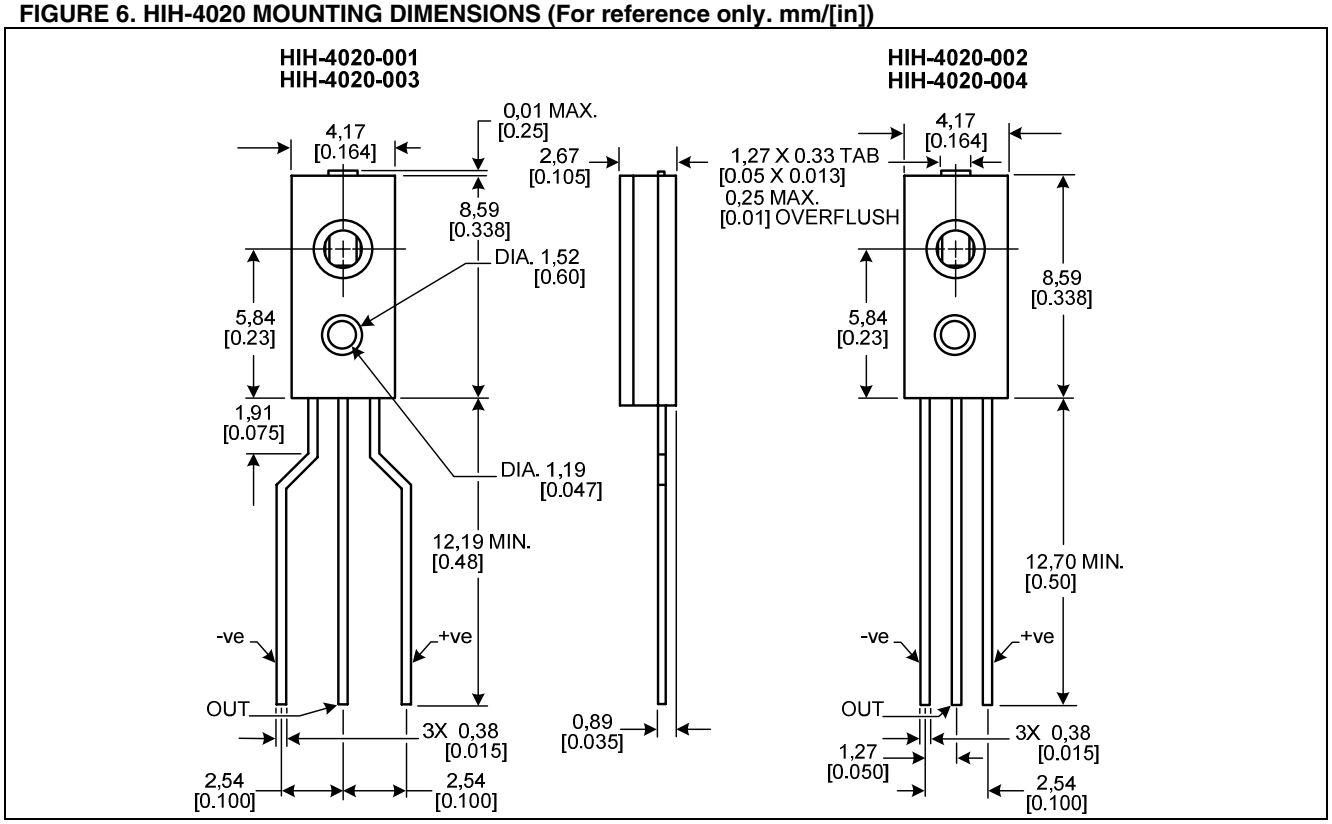


FIGURE 7. HIH-4021 MOUNTING DIMENSIONS (For reference only. mm/[in])

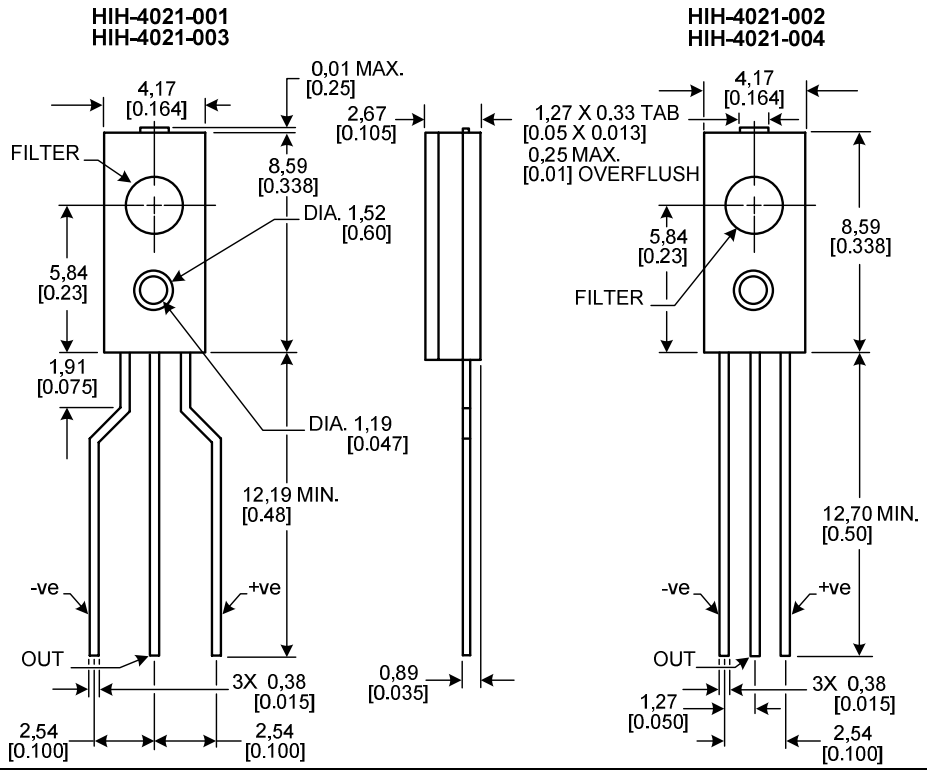
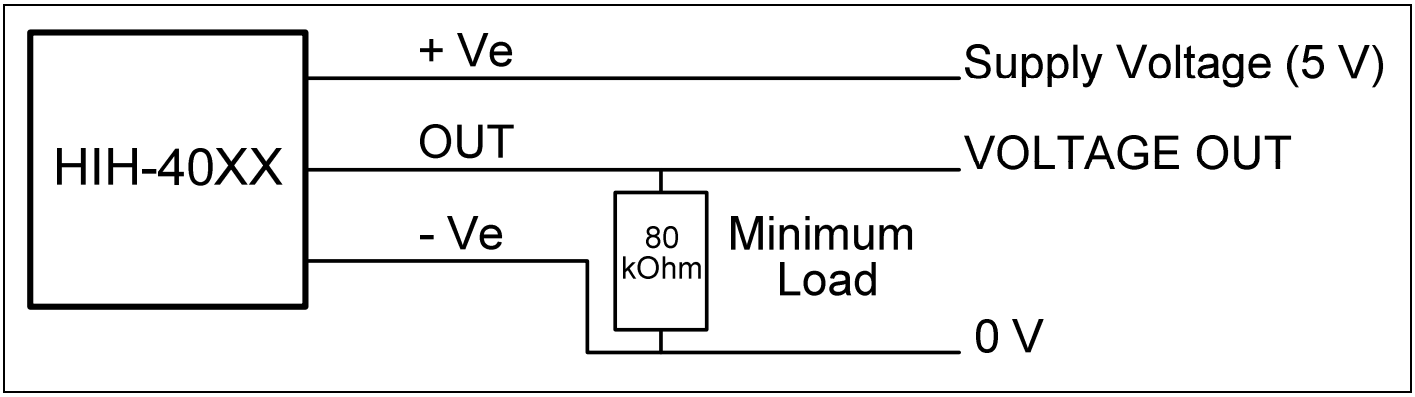


FIGURE 8. TYPICAL APPLICATION CIRCUIT



ORDER GUIDE

Catalog Listing	Description
HIH-4010-001	Integrated circuit humidity sensor, 2,45 mm [0.100 in] lead pitch SIP
HIH-4010-002	Integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP
HIH-4010-003	Integrated circuit humidity sensor, 2,45 mm [0.100 in] lead pitch SIP, calibration and data printout
HIH-4010-004	Integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP, calibration and data printout
HIH-4020-001	Covered integrated circuit humidity sensor, 2,45 mm [0.100 in] lead pitch SIP
HIH-4020-002	Covered integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP
HIH-4020-003	Covered integrated circuit humidity sensor, 2,45 mm [0.100 in] lead pitch SIP, calibration and data printout
HIH-4020-004	Covered integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP, calibration and data printout
HIH-4021-001	Covered, filtered integrated circuit humidity sensor, 2,45 mm [0.100 in]lead pitch SIP
HIH-4021-002	Covered, filtered integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP
HIH-4021-003	Covered, filtered integrated circuit humidity sensor, 2,45 mm [0.100 in] lead pitch SIP, calibration and data printout
HIH-4021-004	Covered, filtered integrated circuit humidity sensor, 1.27 mm [0.050 in] lead pitch SIP, calibration and data printout

FURTHER HUMIDITY SENSOR INFORMATION

See the following associated literature at **www.honeywell.com/sensing**:

- Product installation instructions
- Application sheets:
  - Humidity Sensor Performance Characteristics
  - Humidity Sensor Theory and Behavior
  - Humidity Sensor Moisture and Psychrometrics
  - Thermoset Polymer-based Capacitive Sensors

⚠ WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- 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.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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