Installation Instructions for the **HIH-4000 Humidity Sensors**

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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-4000 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).



Table 1. Recommended PCB Mounting Sockets

Catalog Listing	Mill-Max Socket Number
HIH-4000-001 HIH-4000-003 HIH-4000-005	310-41-132-41-001 or similar
HIH-4000-002 HIH-4000-004	851-43-032-10-001 or similar

SOLDERING/ASSEMBLY

CAUTION

IMPROPER CLEANING

- Insert and solder the sensor after the PCB cleaning process.
- Clean sensor with isopropyl alcohol after soldering.

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

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 ºC to 260 ºC [482 ºF to 500 ºF].

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 2. 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)	–	1.2	–	% RH	–
Voltage supply	4	–	5.8	Vdc	2
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 temperature coefficient at 50% RH, 5V	–	-4	–	mV/ºC	–
Operating temperature	-40[-40]	See Figure 1.	85[185]	ºC[ºF]	–
Operating humidity	0	See Figure 1.	100	% RH	3
Storage temperature	-50[-58]	–	125[257]	ºC[ºF]	–
Storage humidity	See Figure 2.			% RH	3

Specific Notes:

1. Can only be achieved with the supplied slope and offset. For HIH-4000-003 and HIH-400-004 catalog listings only.
2. Device is calibrated at 5 Vdc and 25 ºC.
3. 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.)

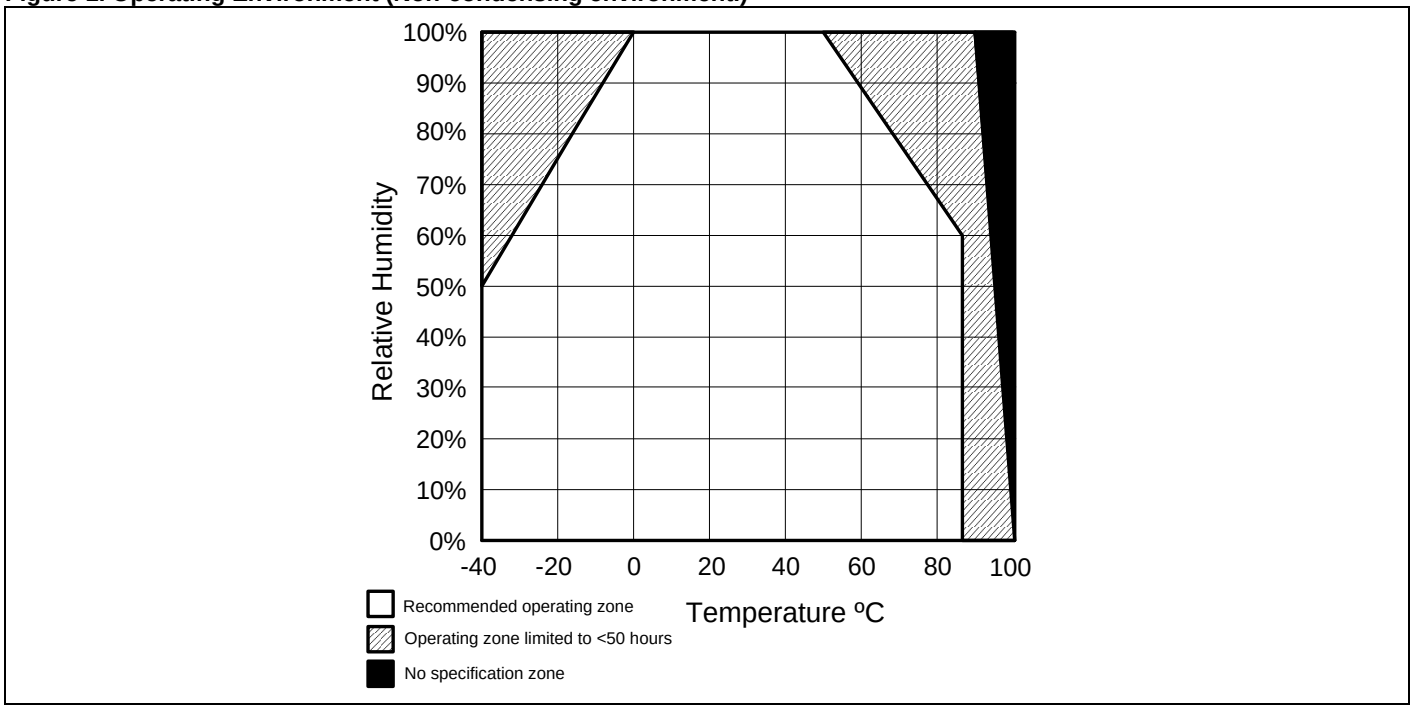


Figure 2. Storage Environment (Non-condensing environment.)

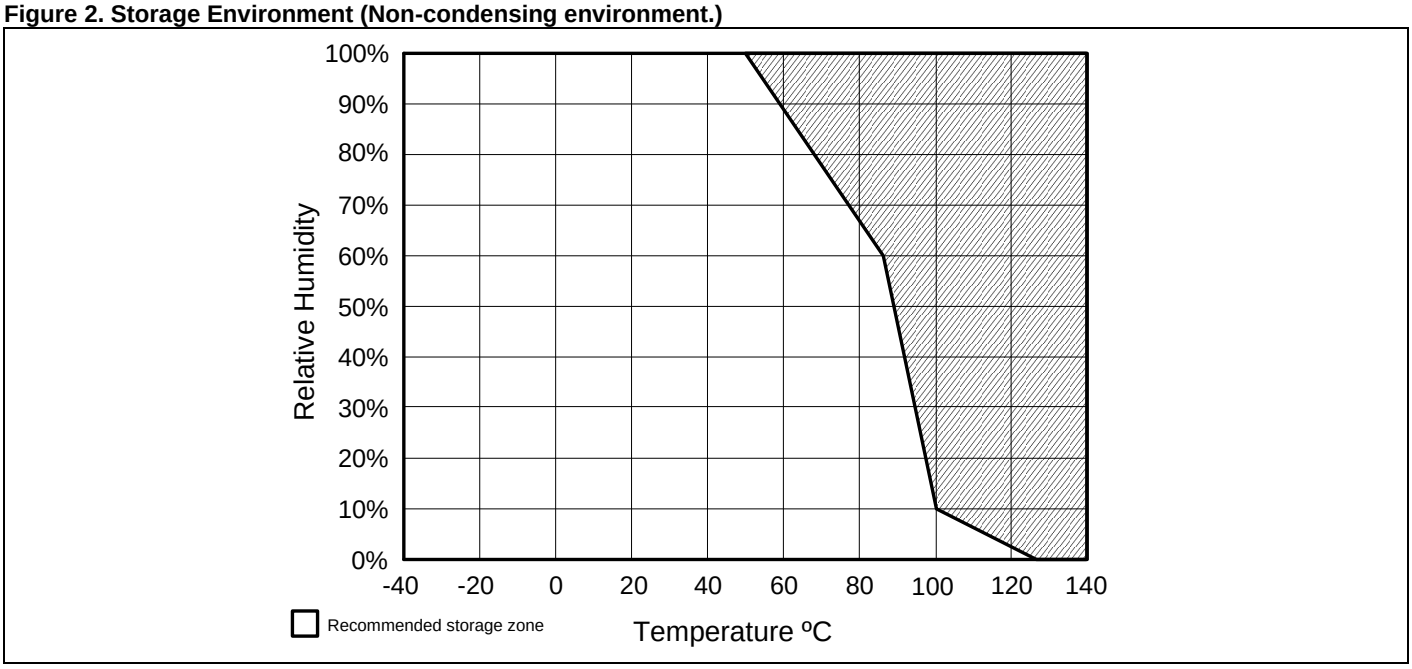
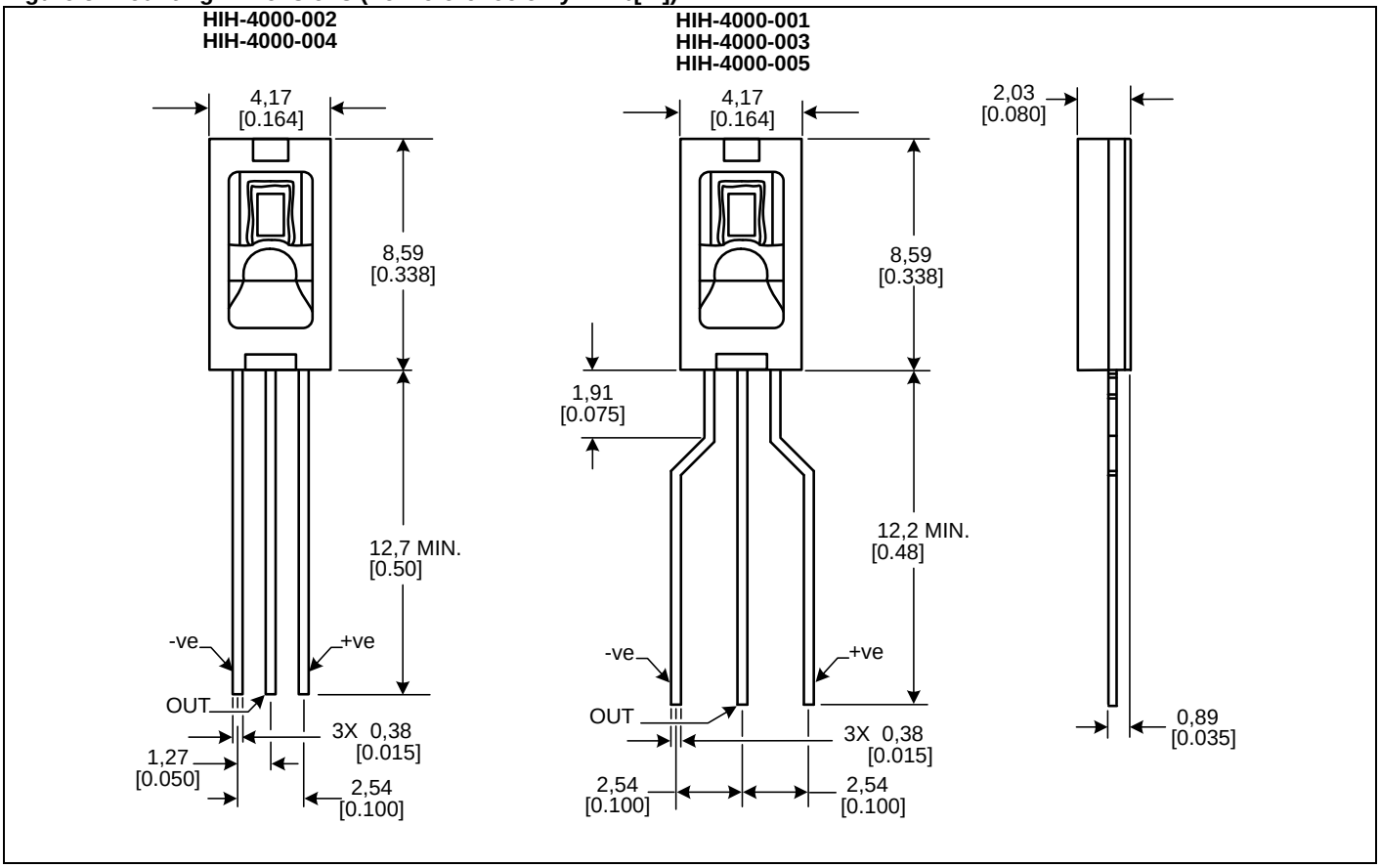


Figure 3. Mounting Dimensions (For reference only. mm/[in])



⚠ 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.

WARRANTY/REMEDY

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