



HIH-4602-C



Actual product appearance may vary.

HIH-4602 Series monolithic IC humidity sensor with integral precision RTD in TO-5 can, calibration and data printout

Features

- Molded thermoset plastic housing
- Molded thermoset plastic housing
- Near linear voltage output vs %RH
- Laser-trimmed interchangeability
- Chemically resistant
- Enhanced accuracy, fast response
- Stable, low drift performance
- Built-in static protection
- Often ideal for dew point and absolute moisture
- TO-5 housing

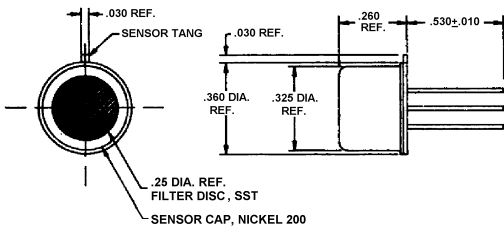
Potential Applications

- Refrigeration equipment
- Drying
- Meteorology
- Battery-powered systems
- OEM assemblies

Description

The HIH-4602-A/C Relative Humidity (RH) sensors combine both relative humidity and temperature sensing in a TO-5 housing with a hydrophobic sintered stainless steel filter. The laser-trimmed, thermoset polymer capacitive sensing elements have on-chip integrated signal conditioning. The temperature sensor is thermally connected with the RH sensor making the HIH-4602-A/C often ideal for measuring dew point and other absolute moisture terms. The HIH-4602-A contains an integral thermistor, while the HIH-4602-C contains an integral precision RTD. Factory calibration data supplied with each sensor allows individually matched downstream electronics and ± 3.5 %RH total accuracy.

Product Specifications	
Package Type	TO-5 can
Operating Temperature Range	-40 °C to 85 °C [-40 °F to 185 °F]
Operating Humidity Range	0% RH to 100% RH
Interchangeability	0% RH to 59% RH ±5%, 60% RH to 100% RH ±8%
Accuracy (BFSL)	±3.5%
Hysteresis	3% RH
Response Time	50 s 1/e in slow moving air
Repeatability	±0.5% RH
Settling Time	70 ms max.
Max. Supply Voltage	5.8 Vdc
Max. Supply Current	500 µA
Stability at 50% RH	±1.2% RH
Output Signal	Analog voltage for humidity, resistance for temperature
Covered Device	Yes
Moisture/Dust Filter	Yes
Combined Humidity and Temperature Sensor	Yes
Calibration and Data Printout	Yes
Temperature Sensor Type	Thin platinum RTD class 2B (Ro: ±0.25%), 1 kOhm at 0 °C [32 °F]
Series Name	HIH-4602
Availability	Global



TEMPERATURE SENSOR	
THIN FILM PLATINUM RTD	
1000 ohm ± 0.2% @ 0°C	
Alpha = 0.00375 ohm / ohm / °C	
ACCURACY = ±0.5°C @ 25°C	

OPERATING CHARACTERISTICS
at 5.0 VDC AND 25°C UNLESS OTHERWISE NOTED

SPECIFICATION	MIN	TYP	MAX	UNIT
INTERCHANGEABILITY				
0 to 60%RH	-5		5	% RH
60% to 100%RH	-8		8	% RH
ACCURACY, (BFSL)		±3.5		% RH
ACCURACY, (2nd ORDER CURVE)		±2.5		% RH
HYSTERESIS		3		% RH
REPEATABILITY		±0.5		% RH
SETTLING TIME			70	mS
RESPONSE TIME, 1/e IN SLOW MOVING AIR		50		Sec.
STABILITY, AT 50%RH IN 1 YEAR		1.2		% RH
POWER REQUIREMENTS				
VOLTAGE SUPPLY	4		5.8	VDC
CURRENT SUPPLY			500	µA
VOLTAGE OUTPUT, 1st ORDER CURVE FIT	$V_{out} = (V_{supply}) (0.0062 (\text{SENSOR RH}) + 0.16)$ TYP at 25°C			
VOLTAGE OUTPUT, 2nd ORDER CURVE FIT	$V_{out} = 0.00003(\text{SENSOR RH})^2 + 0.0281(\text{SENSOR RH}) + 0.820$, TYP at 25°C			
TEMPERATURE COMPENSATION	$V_{out} = (0.0305 + 0.000044T - 0.000011T^2)(\text{SENSOR RH}) + (0.9237 - 0.0041T + 0.000040T^2)$, T=TEMPERATURE IN °C			
OPERATING TEMPERATURE	-40	SEE CHART	85	°C
OPERATING HUMIDITY	0	SEE CHART	100	% RH
STORAGE TEMPERATURE	-40		125	°C
STORAGE HUMIDITY		SEE CHART		% RH

DATA PRINTOUT (EXAMPLE)	
MODEL	HH-4602-C
CHANNEL	92
WAFER	030996M
MRP	337313
CALCULATED VALUES AT 5 V	
Vout @ 0% RH	0.958 V
Vout @ 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	(Vout-ZERO OFFSET)/SLOPE
	(Vout-0.958)/0.0307
RATIOMETRIC RESPONSE FOR 0 TO 100% RH	
Vout	Vsupply (0.1915 TO 0.8130)

NOTES

- 1 - DEVICE IS CALIBRATED AT 5 VDC AND 25°C
- 2 - NONCONDENSING ENVIRONMENT
- 3 - CROSS-HATCHED OPERATING ZONE LIMITED TO <50 HOURS
- 4 - NO SPECIFICATION ZONE
- 5 - DEVICE IS RATIOMETRIC TO SUPPLY VOLTAGE
- 6 - EXTENDED EXPOSURE TO >=90% CAUSES A REVERSIBLE SHIFT OF 3% RH
- 7 - THIS SENSOR IS LIGHT SENSITIVE AND SHOULD BE SHIELDED FROM BRIGHT LIGHT TO ACHIEVE BEST PERFORMANCE

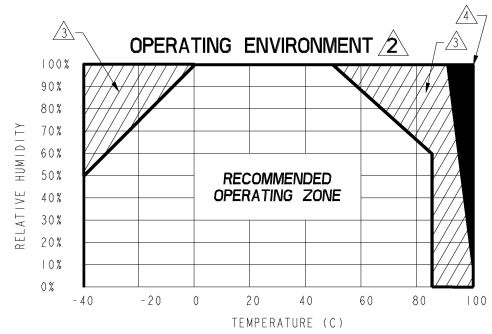
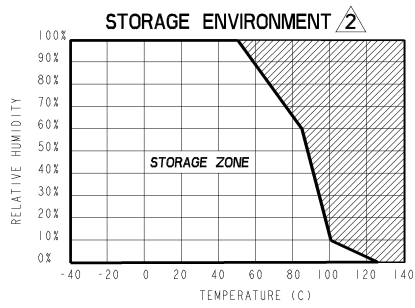


DESIGN UNITS: INCH	DRAWN	AS	05NOV04
TOLERANCES UNLESS NOTED:	CHECK	AK	05NOV04
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TWO PLACE .XXX ± 0.015			
THREE PLACE .XXXX ± 0.005			
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		TITLE		RH SENSOR IN TO-5 CAN		HH-4602 SERIES	
		SIZE	C	TYPE	I	DRAWING NAME	HH-4602-C

THIRD ANGLE PROJECTION	RASTER	SCALE	3:1	SHEET	1 OF 2
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	SIZE	DWG TYPE	DRAWING NAME
	C	I	HIH-4602-C
SCALE	3:1	SHEET	2 OF 2