

For Reference Only

Product Specifications

HSU – 07A1 – N
Humidity Sensor Unit

HOKURIKU ELECTRIC INDUSTRY CO.,LTD.

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1. Application

This specification shall be applied to the relative humidity sensor [HSU-07A1-N].

2. Type Designation

HSU - 07 A 1 - N

Pb free

Design No.

Mark of Contour

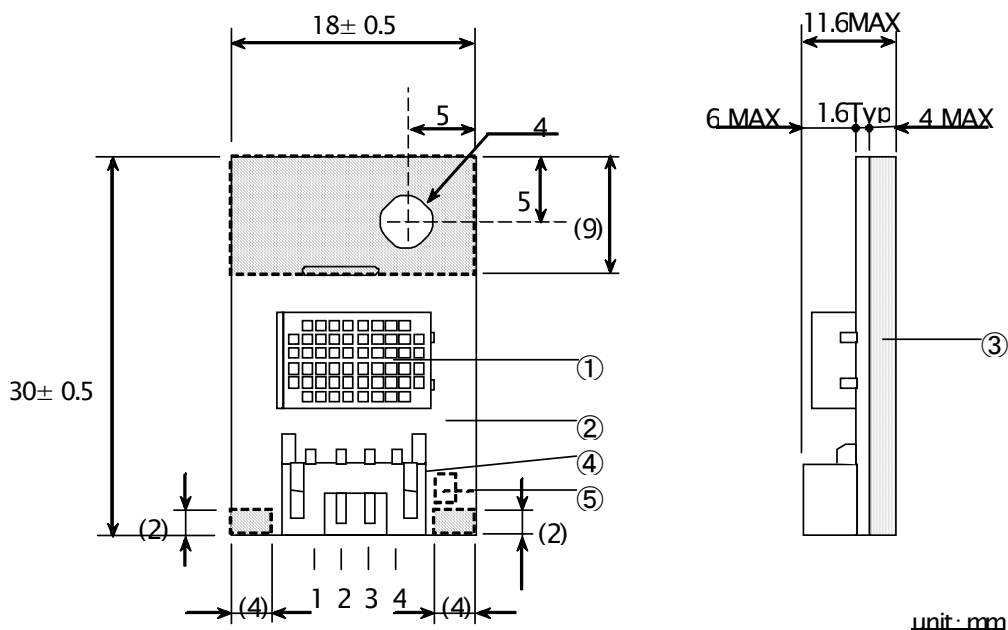
Mark	Substrate Contour	Mounted Hole
A	18 × 30 mm	φ 4mm × 1
B	18 × 21 mm	----

Number of Humidity Sensor Element Type

Mark	Humidity Sensor Element
07	HIS - 06

Humidity Sensor Unit Type Name

3. Outline Dimensions



unit: mm

※ Mounting of a part is prohibited on the hatched area.

Connector Pin Arrangement

No.	Name	Mark
1	Power Source Terminal	V cc
2	Output Terminal	V out
3	Ground Terminal and Thermistor Terminal	GND TH1
4	Thermistor Terminal	TH2

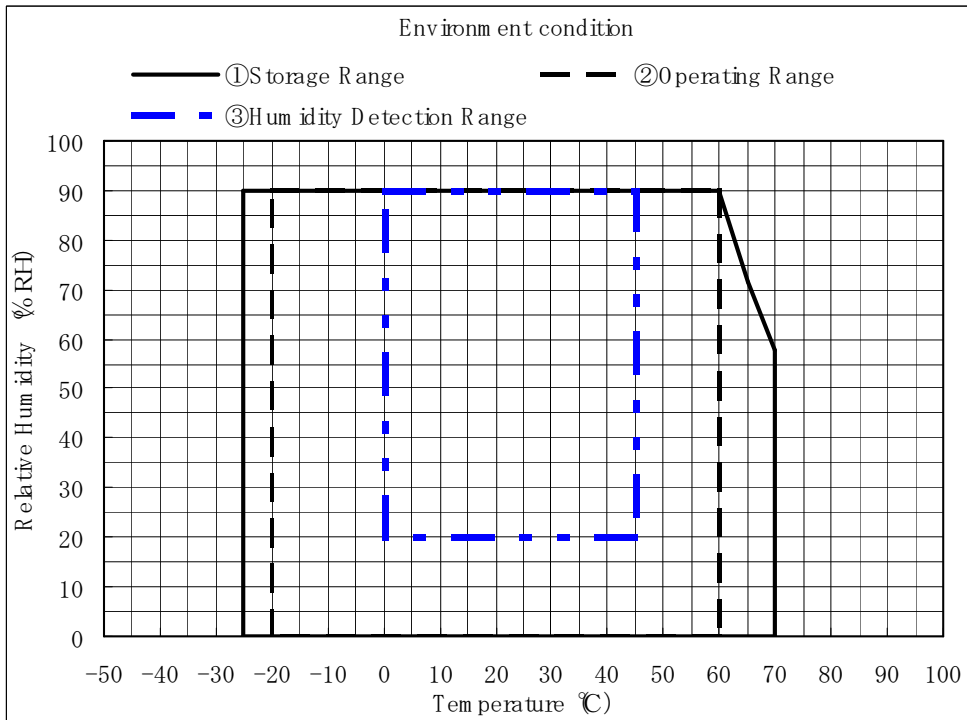
Parts Component Table

Parts No.	Name	Material and Specification
①	Humidity Sensor	HIS-06
②	Printed Circuit Board	C EM-3 UL94V-0 t=1.6 mm
③	SMD Mount Surface	
④	Connector	S4B-PH-K-S(LF), 2mm pitch, 4Pin manufactured by JST
⑤	Thermistor	NSM3503J400J

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4. Absolute Maximum Ratings

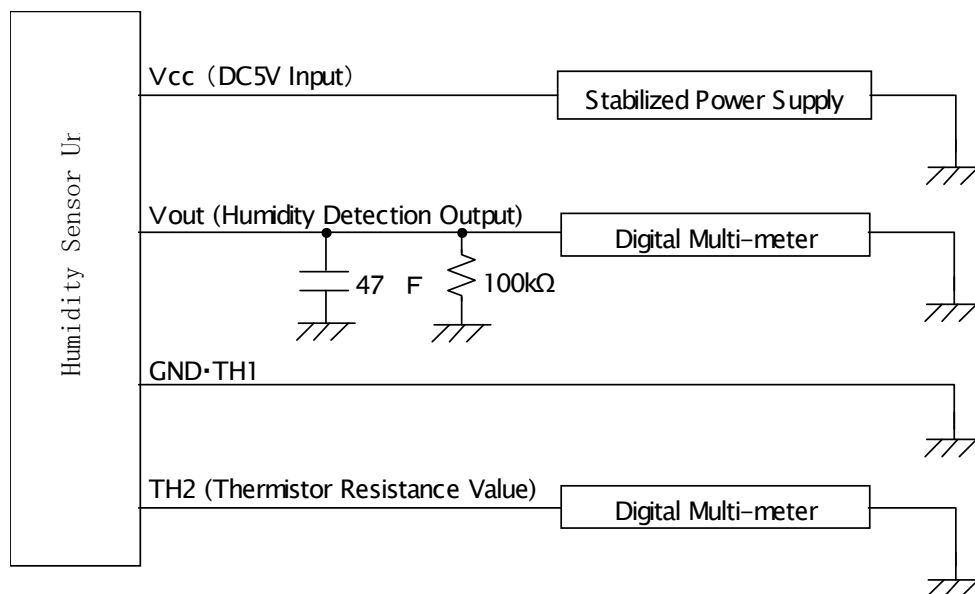
No.	Item	Rated Value
1	Rated Voltage	DC 0 ~ 7 V
2	Storage Temp. Range	-25 ~ +70 °C
3	Storage Humidity Range	0 ~ 90 %RH (Do not let it have dewdrops.)
4	Operating Temp. Range	-20 ~ +60 °C
5	Operating Humidity Range	20 ~ 90 %RH
6	Humidity Detection Range	0 ~ 4°C、 20~90%RH



5. Recommended Line Voltage Range

DC:5V +/- 0.25V

6. Measuring Circuit



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7. Electrical Characteristics

The condition regarding the table below is 25deg.C in temperature and operating voltage 5V.
(The one for the output shift caused by the line voltage variation is not included.)

	Item	Conditions	Min.	Typ	Max.	Unit	
Humidity	Humidity Detection Output (Accuracy)	40%RH	----- 1.578 (-5%RH)	1.744	1.888 (+5%RH)	V	
		60%RH	----- 2.120 (-5%RH)	2.220	2.318 (+5%RH)	V	
	Consumption Current	I cc	60%RH	1.30		mA	
	Hysteresis Characteristics		30 ~ 90 %RH		+/- 1		%RH
	Humidity Response Characteristics		30%RH⇔90%RH Wind speed 1.2 cm/sec. (90% arrival)	-----	3.5	-----	minutes
Temp.	Thermistor Characteristics	Resistance Value	25 deg.C	50kΩ +/-5%		-----	
		B Constant	25/50 deg.C	4,000K +/-200K		-----	

8. Reliability Tests

No.	Test Item	Test Condition	Criteria
1	Drop Test	Drop the test piece one time from the height of 1m in each of X, Y and Z directions onto the lauan material of 30 mm thickness.	The sample shall not have any abnormality in the appearance and the humidity detection output shall be in the electric characteristics of item 7.
2	Heat Shock	The samples are subjected to 10 cycles of 2 hours' exposure of each of -25deg.C and +70deg.C (Do not let it have dewdrops.)	The variation of the humidity detection output shall be within +/- 5% against the initial value.
3	Exposure to High Temperature	The samples are exposed to a temp. of +70deg.C for 1000 hrs.	
4	Exposure to High Humidity	The samples are exposed to a temp. of +40deg.C with 90 +/- 5%RH for 1000 hrs.	
5	Exposure to Low Temperature	The samples are exposed to a temp. of -25deg.C for 1000 hrs.	

*1)The measurement of the humidity detection output is done after 15 minutes has passed with the advantage way-type precision humidity producing device after the temperature humidity setting.

*2)The measurement of the reliability test parts is done after they are left for more than two hours in the normal temperature and the normal humidity.

9. Notes for Use

(1)Do not get the product wet in the water, and do not let it have dewdrops.
Characteristics may change permanently.

(2)Do not make foreign materials such as a solvent, oil and fat stick to the humidity sensor.
It may stop fulfilling normal features.

(3)Do not use for medical apparatus (application involving risk of affecting life).

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10. Temperature Humidity Characteristics of HSU-07A1-N (for Reference)

Temp.	Relative Humidity (%RH)							
	20	30	40	50	60	70	80	90
5°C	0.879	1.375	1.724	2.012	2.211	2.385	2.561	2.754
25°C	0.885	1.383	1.744	2.011	2.220	2.412	2.589	2.771
45°C	1.018	1.470	1.776	2.013	2.212	2.398	2.594	2.814

