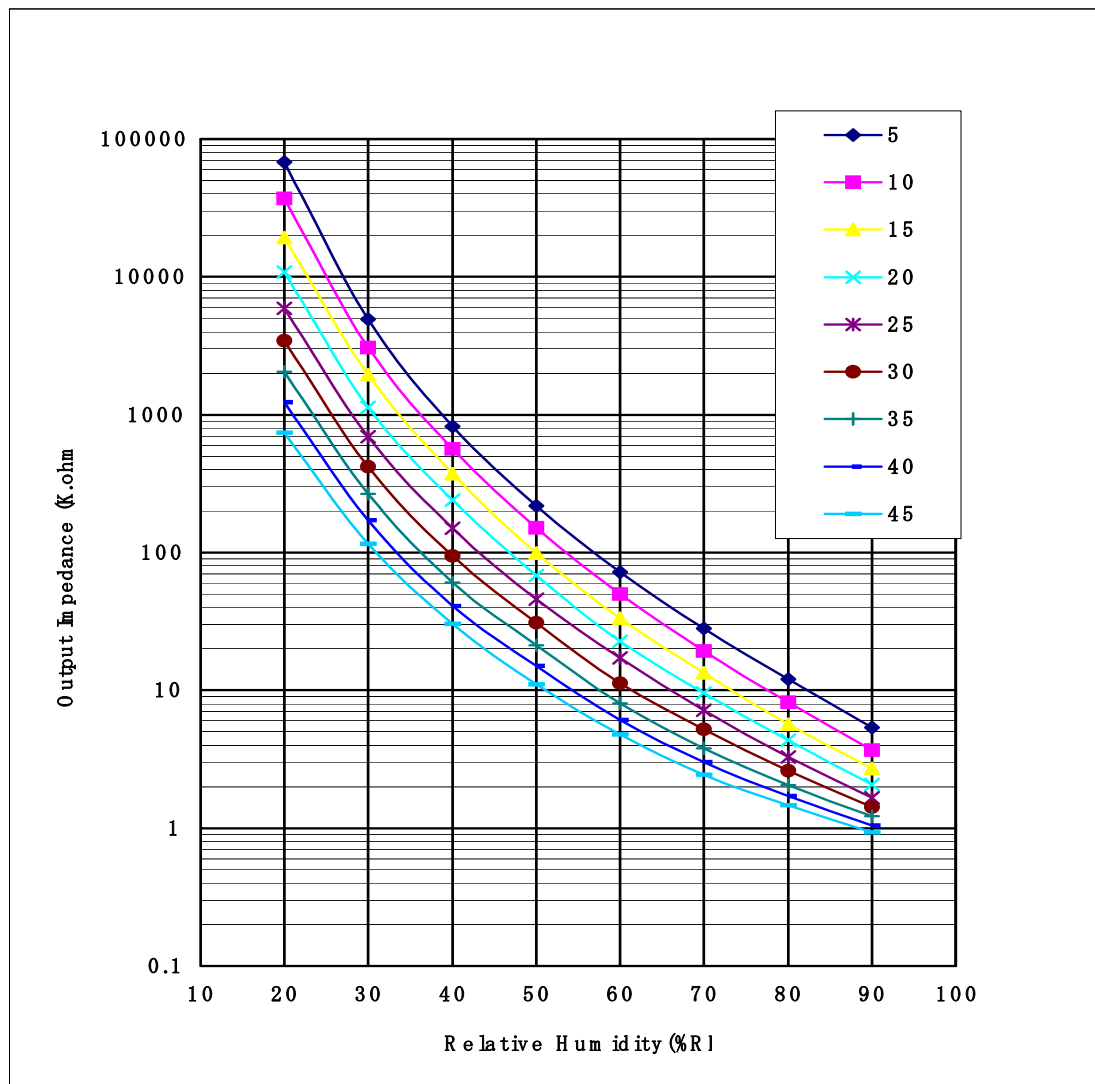


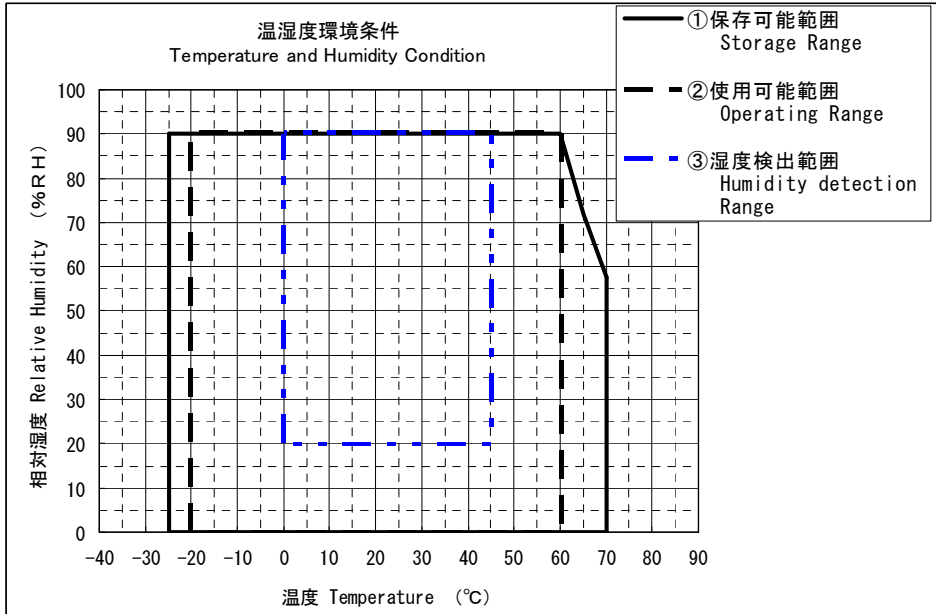
40	1235	172	41.8	14.97	6.11	3.00	1.71	1.05
45	740	115	30.2	11.01	4.76	2.43	1.46	0.93



HOKURIKU ELECTRIC INDUSTRY CO., LTD

4、绝对最大定格 Absolute Maximum Ratings

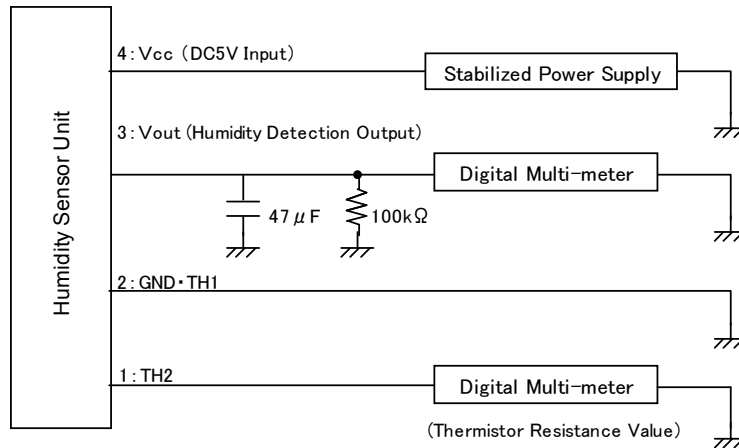
- (1) 电源电压范围 Rated Voltage range : DC.0~7 (V)
- (2) 温湿度环境条件 Temperature and Humidity Condition



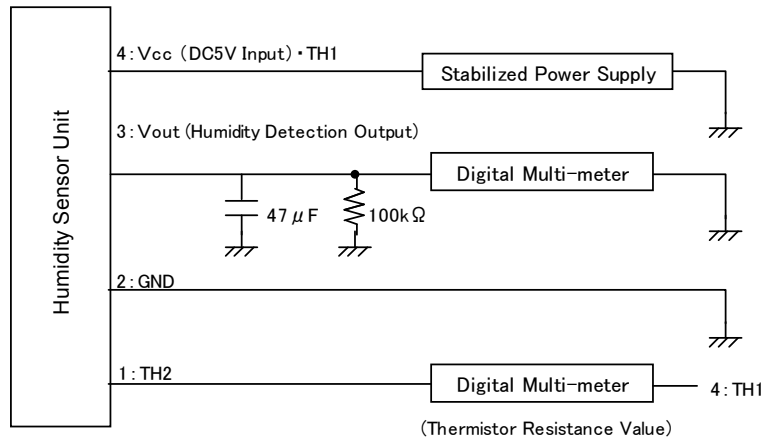
5、推荐电源电压范围 Recommended Line Voltage Range : DC.5V±5%

6、测定回路 Measuring Circuit

<HSU-07J5-N>



<HSU-07J6-N>



7、電気的特性 Electrical Characteristics

下表において、指定無き場合の条件は、「Ta=25°C, Vcc=5.0V」とする。
また、湿度検出出力 (Vout) は6項の測定回路によって測定する。

項目	条件	最小値	標準値	最大値	単位
湿度検出出力	Ta=25°C、H=40%RH	1.578 (-5%RH)	1.744	1.888 (+5%RH)	V
	Ta=25°C、H=60%RH	2.120 (-5%RH)	2.220	2.318 (+5%RH)	V
消費電流	Icc	20~90%RH、	1.3	2.5	mA
ヒステリシス特性	30~90%RH	—	±1	—	%RH
湿度応答特性	30%RH⇔90%RH (9割到達) 風速 1.2cm/sec	—	3.5	—	分
サーミスタ 特性	抵抗値	25°C	10kΩ±1%		—
	B定数	25°C/85°C	3435K±1%		—
	定格電力	—	150		mW

Unless otherwise specified the conditions are Ta=25 degree C and Vcc=5.0V for the table below.
The measurement method of Humidity Detection Output to be adopted is indicated in item 6.

Item	Conditions	MIN.	TYP.	MAX.	Unit
Humidity Detection Output	Ta=25°C、H=40%RH	1.578 (-5%RH)	1.744	1.888 (+5%RH)	V
	Ta=25°C、H=60%RH	2.120 (-5%RH)	2.220	2.318 (+5%RH)	V
Consumption Current	Icc	20~90%RH、	1.3	2.5	mA
Hysteresis Characteristics	30~90%RH	—	±1	—	%RH
Humidity Response Characteristics	30%RH to 90%RH (90% response) Wind velocity 1.2cm/sec.	—	3.5	—	min.
Thermistor Characteristics	Resistance Value	25°C	10kΩ±1%		—
	B Constant	25°C/85°C	3435K±1%		—
	Rated Wattage	—	150		mW

8、信頼性試験項目 Reliability Test

	試験項目	試験条件	判定基準
1	落下	30mm厚のワナ材上に、高さ1mより3回自然落下	外観に異常が無く、7項の湿度検出出力を満足する事。 7項の湿度検出出力の変化量が±5%RH以内である事。
2	サーマルショック	-25°C (1h) ⇔ 70°C (1h) を100回(結露させないこと)	
3	高温放置	70°Cに1000h放置	
4	低温放置	-25°Cに1000h放置	
5	高湿放置	40±5°C、90±5%RHに1000h放置	

- 注1) 湿度検出出力の測定は、分流式精密湿度発生装置にて温湿度設定後、15分以上経過した後に行う。
2) 試験品の測定は、常温常湿中に2h以上放置した後に行う。

	試験項目	試験条件	判定基準
1	Drop Test	Drop the test piece naturally one time from the height of 1m on to the wooden board of 30mm 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 100 cycles of 2 hours' exposure of each of -25°C and +70°C (Do not let it have dewdrops.)	The variation of the humidity detection output of item7 shall be within ±5%RH against the initial value.
3	Exposure to High Temperature	The samples are exposed to a temp. of +70°C for 1000 hrs.	
4	Exposure to Low Temperature	The samples are exposed to a temp. of -25°C for 1000 hrs.	
5	Exposure to High Humidity	The samples are exposed to a temp. of +40°C with 90%RH for 1000 hrs	

- Caution** 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.

1 1、使用上の注意事項 Notes for Use

- (1)製品は極力被水させたり、結露させたりしないで下さい。
- (2)湿度センサに溶剤、油脂等の異物を付着させないで下さい。
正常な機能を果たさなくなる場合があります。
- (3)医療機器（その他人命に関わる用途）には使用しないで下さい。
- (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).

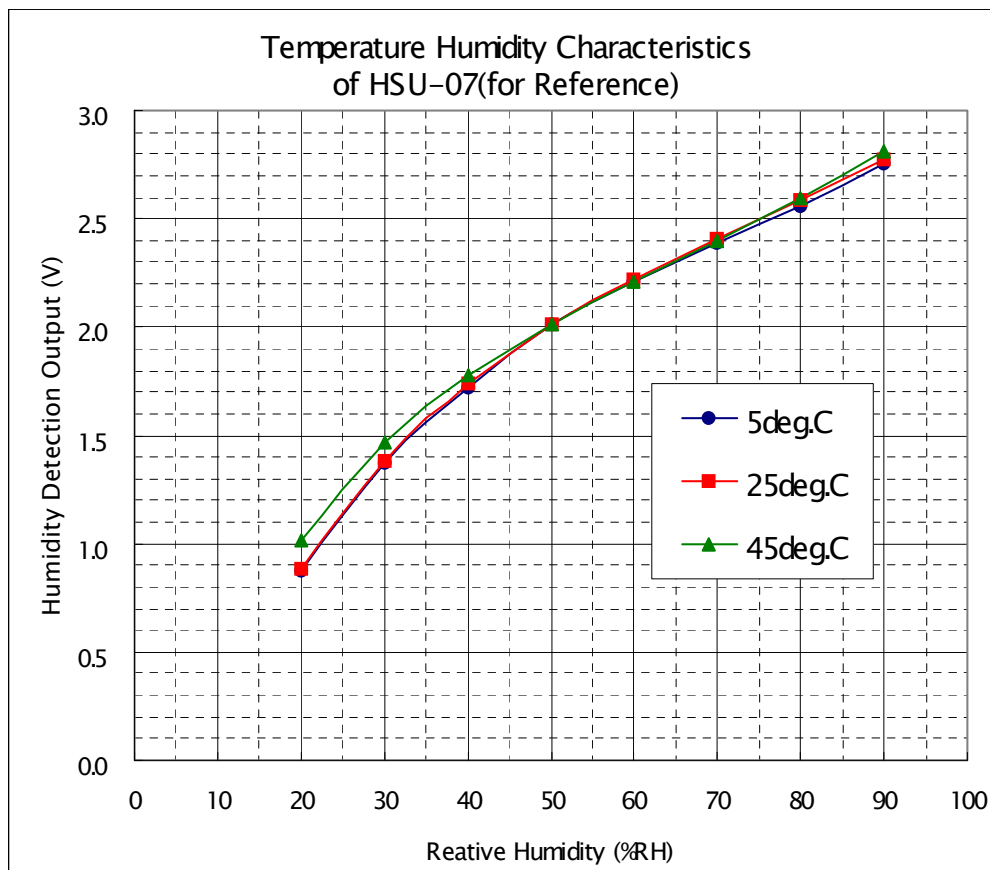
1 2、湿度検出出力特性（参考データ）

Humidity Detection Output Characteristics (for Reference)

第 6 項の測定回路による。Vcc=5.0V。

The measurement method of Humidity Detection Output to be adopted is indicated in item 6.

Temp.	Relative Humidity (%RH)								
	10	20	30	40	50	60	70	80	90
5°C	0.846	0.879	1.375	1.724	2.012	2.211	2.385	2.561	2.754
25°C	0.484	0.885	1.383	1.744	2.011	2.220	2.412	2.589	2.771
45°C	0.320	1.018	1.470	1.776	2.013	2.212	2.398	2.594	2.814



For Reference Only

Product Specifications

HSU – 07A1 – N

Humidity Sensor Unit

HOKURIKU ELECTRIC INDUSTRY CO.,LTD.

HSU-07A1-N Specification 2004/02/23

1/6

Contents

1. Application
2. Type Designation
3. Outline Dimensions
4. Absolute Maximum Rating
5. Recommended Line Voltage Range
6. Measuring Circuit
7. Electrical Characteristic
8. Reliability Tests
9. Notes for Use
10. Temperature Humidity Characteristics (for Reference)

HOKURIKU ELECTRIC INDUSTRY CO.,LTD.

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

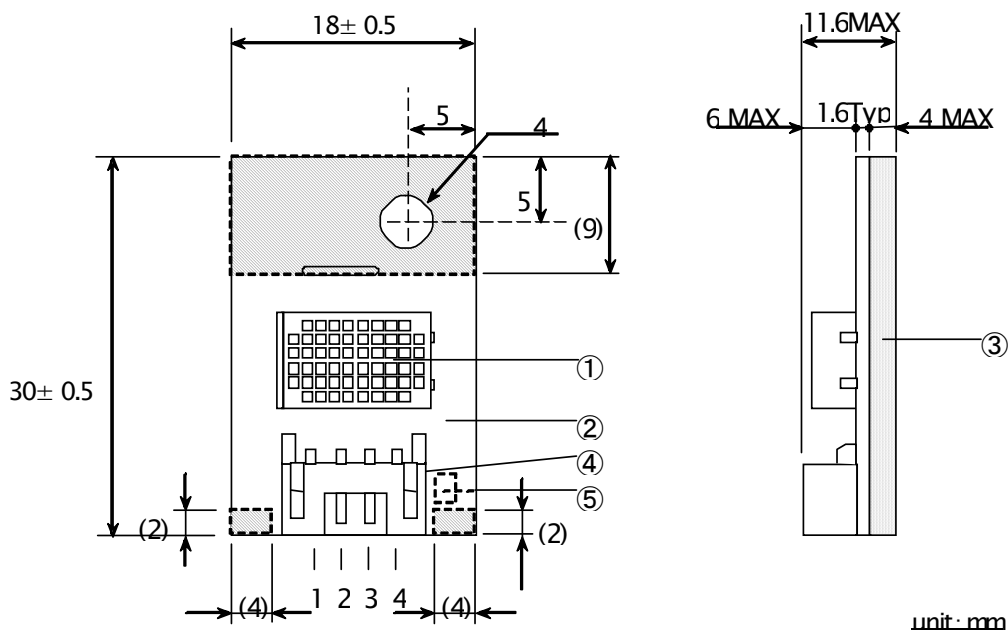
Mark	Substrate Contour	Mounted Hole
A	18 × 30 mm	φ 4mm × 1
B	18 × 21 mm	----

Number of Humidity Sensor Element Type

Mark	Humidity Sensor Element
07	HIS - 06

Humidity Sensor Unit Type Name

3. Outline Dimensions



※ 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	TH 2

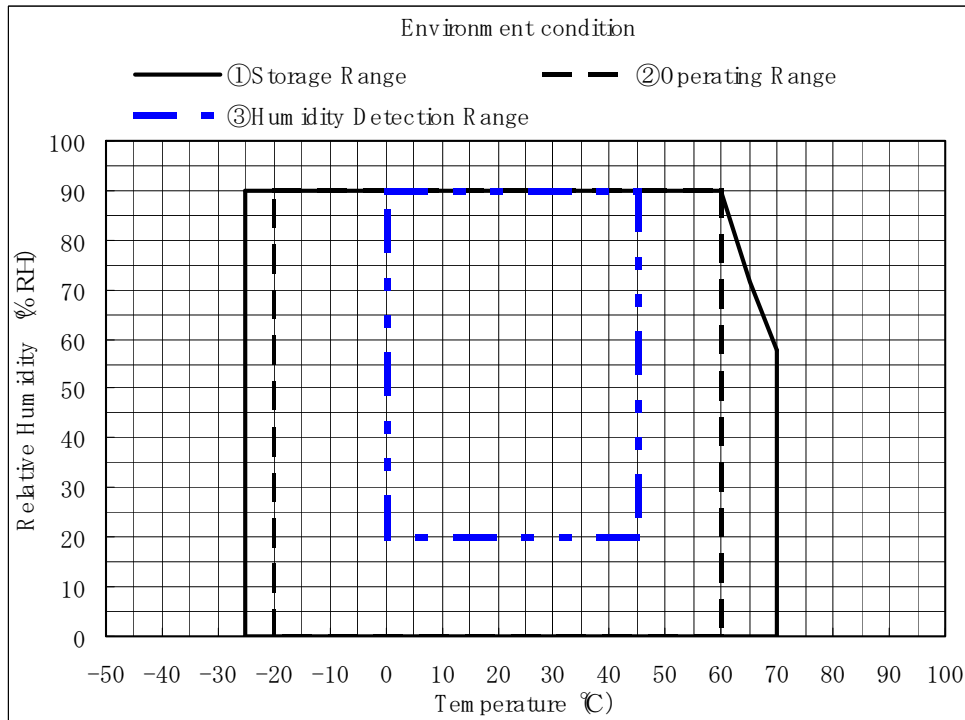
Parts Component Table

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

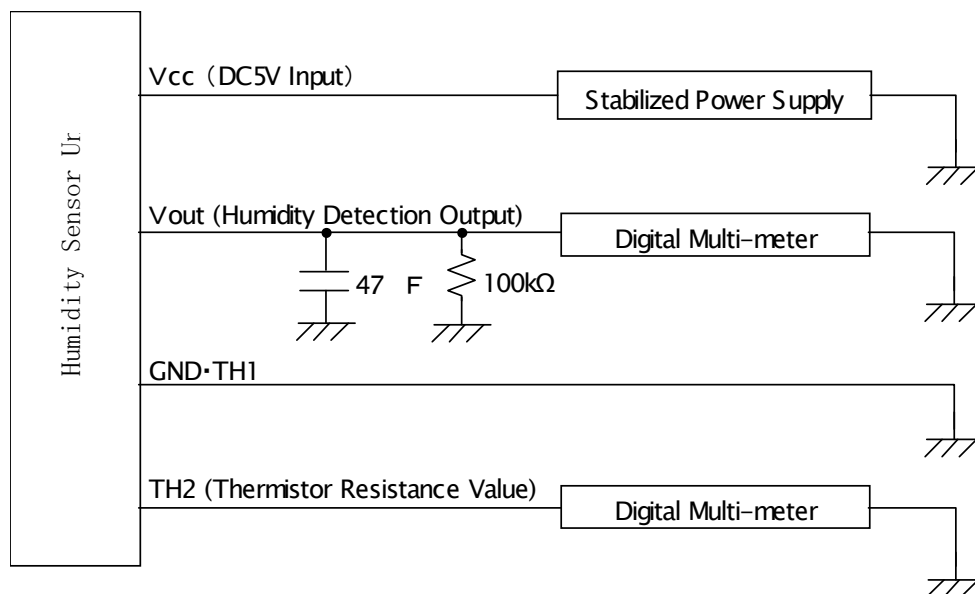
No.	Item	Rated Value
1	Rated Voltage	DC 0 ~ 7 V
2	Storage Temp. Range	-25 ~ +70 °C
3	Storage Humidity Range	0 ~ 90 %RH (Do not let it have dewdrops.)
4	Operating Temp. Range	-20 ~ +60 °C
5	Operating Humidity Range	20 ~ 90 %RH
6	Humidity Detection Range	0 ~ 45°C、20~90%RH



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 \leftrightarrow 90%RH Wind speed 1.2 cm/sec. (90% arrival)	-----	3.5	-----	minutes
Temp.	Thermistor Characteristics	Resistance Value	25 deg.C	50k Ω +/-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.

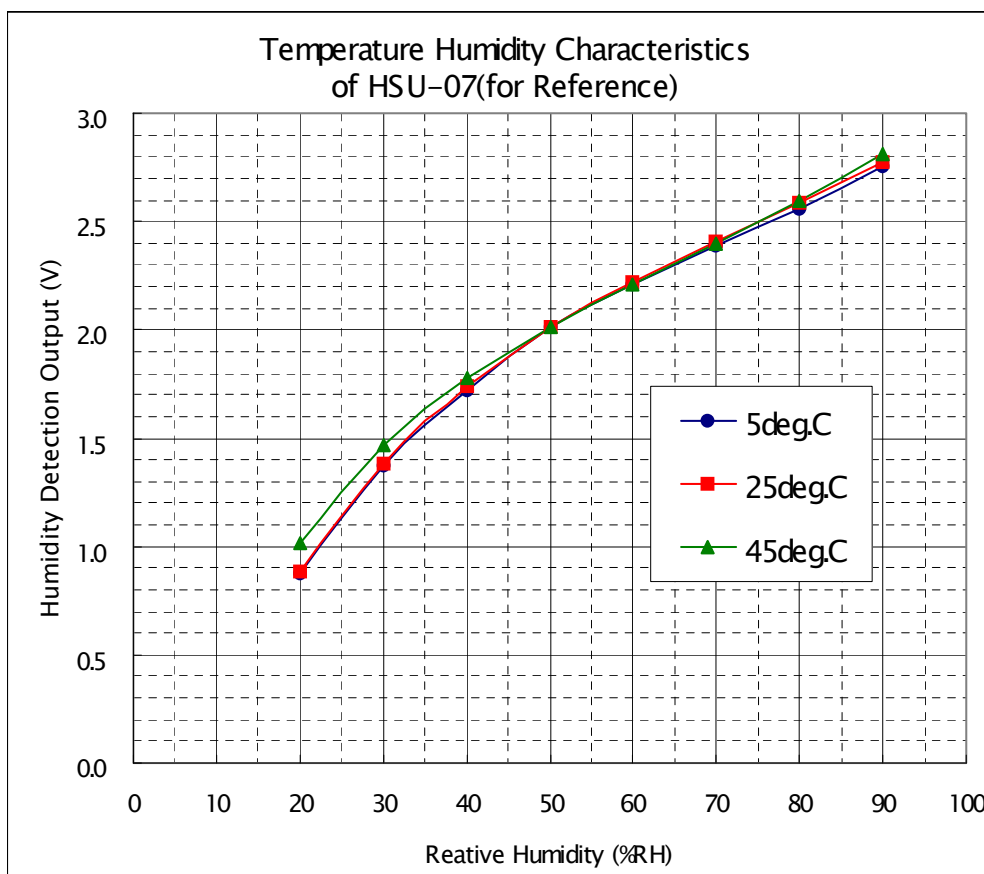
(3)Do not use for medical apparatus (application involving risk of affecting life).

HOKURIKU ELECTRIC INDUSTRY CO.,LTD.

HSU-07A1-N Specification 2004/02/23

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



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HSU-07A1-N Specification 2004/02/23