

For Reference Only

# Product Specifications

HIS-06 N  
Humidity Sensor Element

HOKURIKU ELECTRIC INDUSTRY CO., LTD

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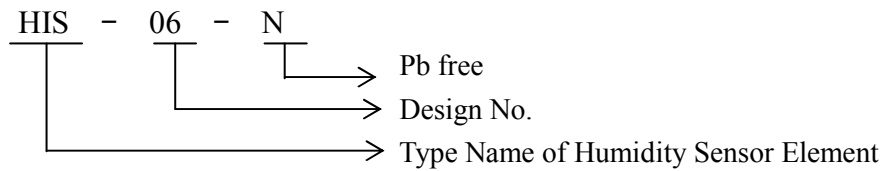
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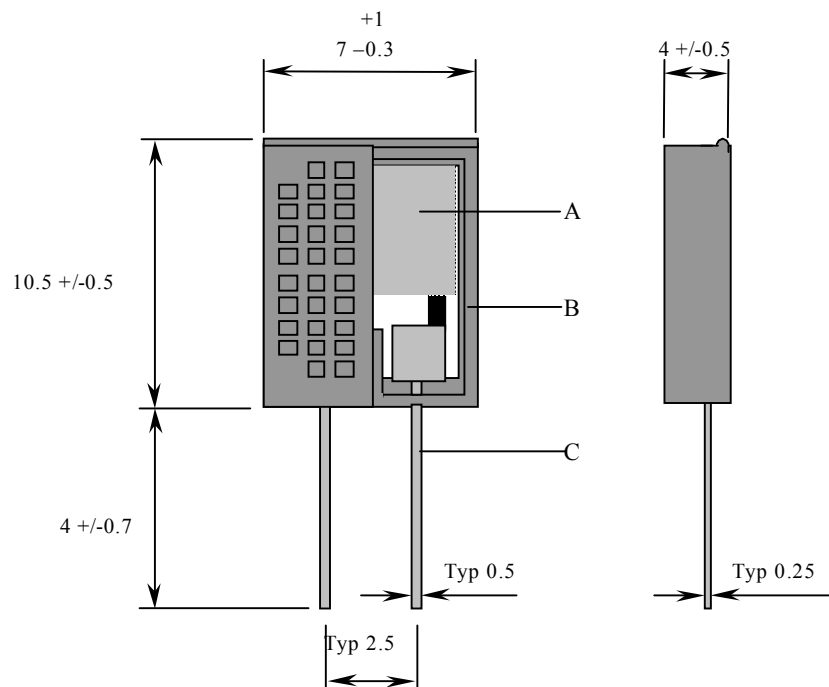
## 1. Application

This specification shall be applied to the relative humidity sensor element [ HIS ].

## 2. Type Designation



## 3. Outline Dimensions



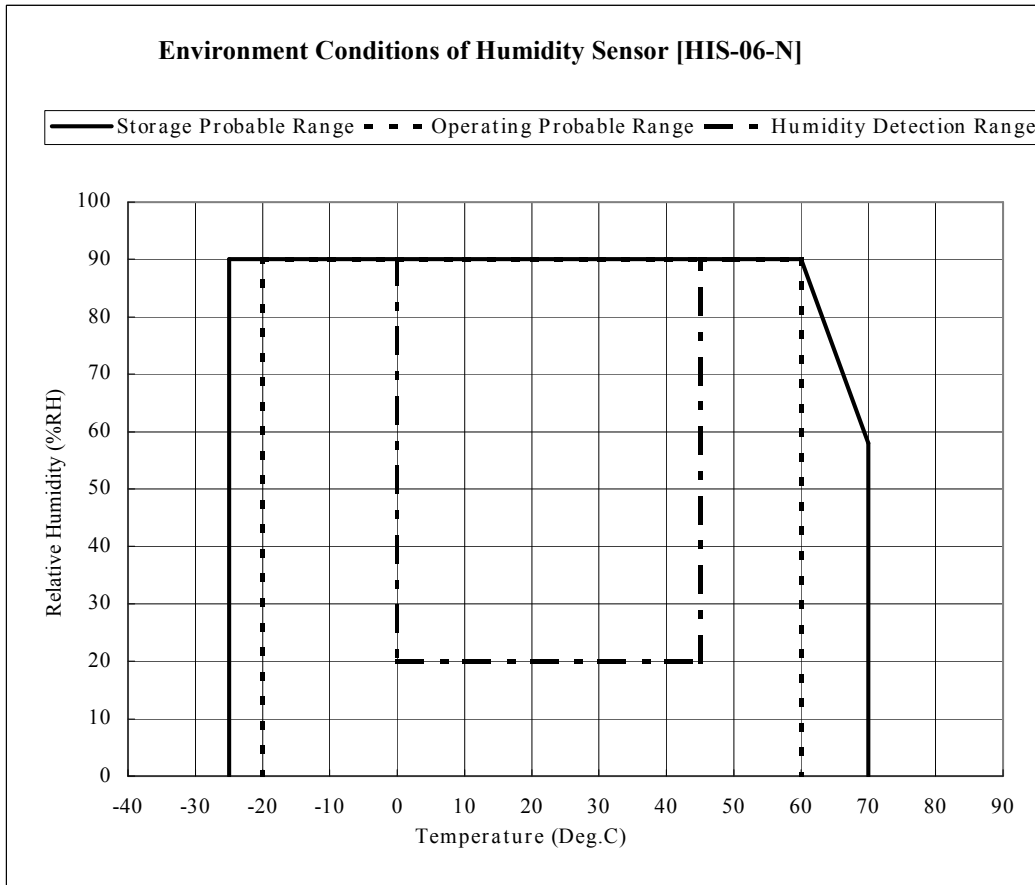
Unit : mm

No.	Name	Material and Specification
A	Humidity Sensor	Manufactured by Hokuriku Electric Ind. Co., Ltd. HIS-06-N (Protected Coat Goods)
B	Case	Polypropylene (Translucence)
C	Lead Terminal	PBR (Solder Plating(Pb free))

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#### 4. Ratings

No.	Item	Rated Value
1	Rated Voltage	The sine wave or square wave of AC 0 to 5V.
2	Rated Power	1.0 mW
3	Storage Temp. Range	-25~+70°C
4	Storage Humidity Range	0~90 %RH (Do not let it have dewdrops.)
5	Operating Temp. Range	-20~+60°C
6	Operating Humidity Range	20~90 %RH (Do not let it have dewdrops.)
7	Humidity Detection Range	0~ 45°C、 20~90%RH



#### 5. Electrical Characteristics

The temperature condition regarding the table below is 25 degree and the measurement method indicated in item 7 (Impedance Measuring Circuit and Conversion Expression) shall be used.

Item	Conditions	Min.	Typ.	Max.	Unit
Humidity Detection Output (Accuracy)	50 %RH	26.6 (+5%RH)	45.8	80.0 (-5%RH)	K.ohm
Hysteresis Characteristics	30 to 90 %RH	—	±1	—	%RH
Humidity Response Characteristics	30%RH to 90%RH (90% arrival) Wind speed 1.2 cm/sec.	—	3.5	—	minutes

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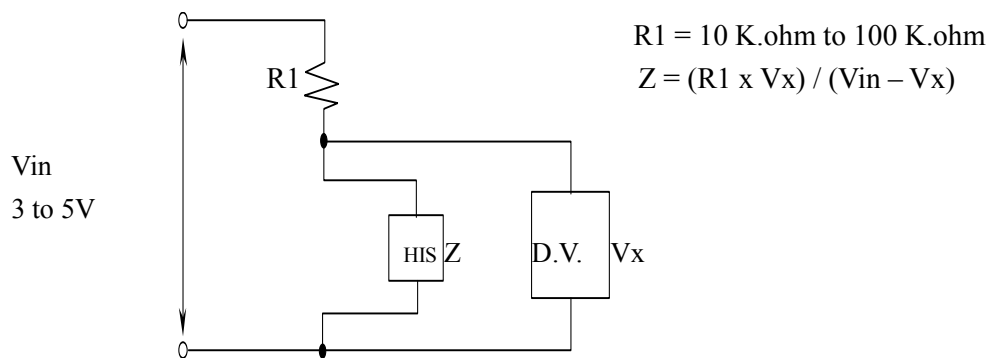
## 6. Reliability Tests

No.	Test Item	Test Condition	Criteria
1	Drop Test	Drop the test piece naturally 3 times from the height of 1 m 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 5.
2	Lead Traction Intensity	The weight of 1 Kg is applied to the lead wire in the direction parallel to the sensor for 10 seconds.	
3	Lead Bending Intensity	The sensor is held vertically, and the weight of 250 g is hung from the lead wire end. The sensor is bend in right angle, and returned to the original shape, and next bend in the same way to the reverse direction, and returned to original shape.	
4	Solder Heat Resistance	Do soldering of 5 +/-2 seconds long on the lead terminal 1.6 to 3.6 mm away from the case side with soldering iron tip temperature 320 +/-10 deg.C.	It should be without coming-off of the terminal and within the electric characteristics of item 5.
5	Heat Shock	The samples are subjected to 10 cycles of 60 minutes' exposures of each of -25 degree and +70 degree. (Do not let it have dewdrops.)	The variation of the humidity detection output shall be within +/-5 % against the initial value.
6	Exposure to High Temperature	The samples are exposed to a temp. of +70 degree for 1000 hrs.	
7	Exposure to High Humidity	The samples are exposed to a temp. of +40 degree with 95 %RH for 1000 hrs.	
8	Exposure to Low Temperature	The samples are exposed to a temp. of -25 degree for 1000 hrs.	
9	Exposure to Low Humidity	The samples are exposed to a temp. of +25 degree with 20 %RH for 1000 hrs.	
10	Load Life	The samples are subjected to consecutive electric load of AC 5V(1 kHz) at normal temperature and humidity for 1000 hrs.	

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

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

## 7. Impedance Measuring Circuit and Conversion Expression



## 8. Notes for Use

- (1) This product has been processed to have water-resistant coating and even if a small amount of water sticks to the part, the humidity sensing membrane will not melt away. However please do not use this part under an environment where water adhesion or dewing occurs for a long period of time or frequently.
- (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) Please do not bend and extend the lead terminal more than once.
- (4) Attachment by flow soldering or re-flow soldering is not possible.
- (5) Please solder the terminal 1.6 mm or over away from the case side with the iron tip temperature  $320 \pm 10 \text{ deg.C}$  within 5 seconds.
- (6) This part cannot be used by the DC power source.
- (7) Do not use for medical apparatus (application involving risk of affecting life).

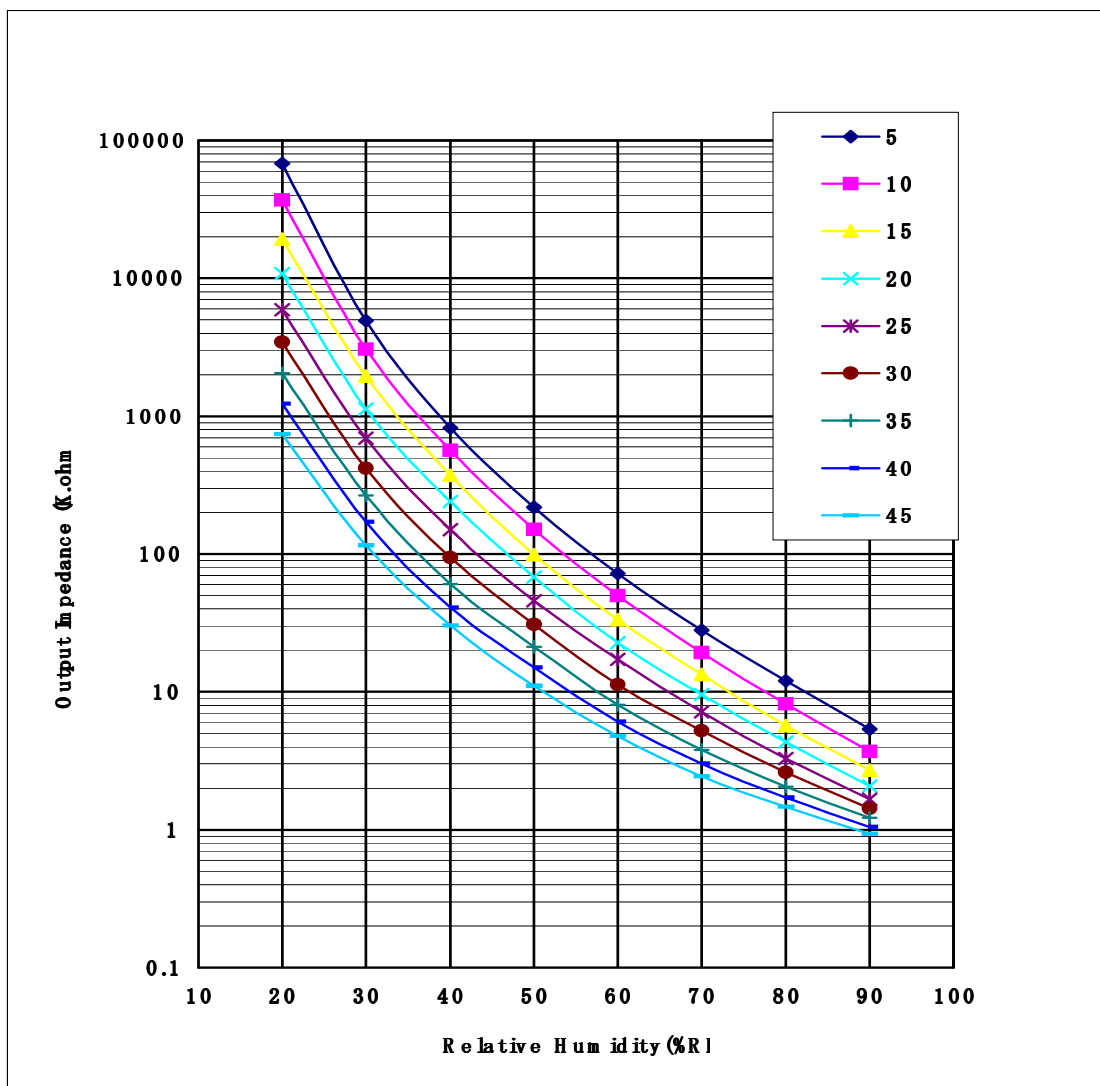
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## 9. Temperature Humidity Characteristics (for Reference)

By the measuring circuit of the item 7. Frequency : at 1 KHz

(K.ohm)

Temp. (Deg.C)	Relative Humidity (%RH)							
	20	30	40	50	60	70	80	90
5	68057	4915	824.0	218.5	72.27	28.15	12.09	5.35
10	35993	3076	566.4	151.4	49.94	19.30	8.21	3.70
15	19368	1906	375.3	99.10	33.47	13.36	5.70	2.70
20	10780	1130	240.0	68.00	22.70	9.60	4.33	2.08
25	5916	694	149.9	45.80	16.00	7.00	3.28	1.68
30	3450	420	94.6	31.00	11.30	5.20	2.60	1.42
35	2053	268	60.6	21.18	8.05	3.83	2.08	1.20
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



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