PRODUCT	Temperatur & Humidity Sensing Module	SHINYEI KAISHA Electronic Instruments Div.			Issued	Jan. 30, 2008
					Rev.1	
		Approval	Check	Drawer	Rev.2	
MODEL NO.	RHI-112A				Rev.3	
					Rev.4	
					Rev.5	

1. Scope

This specification is applied to the Temperature & Humidity Sensing Module Type RHI-112A.

2. Configuration

	Model No.	Connector Type	Drawing
1	RHI-112A	Connector (S4B-PH-K-S(LF)(SN))	Page7, Fig.1

3. Electrical characteristics

(3 - 1) Supply Voltage (Vin): 3.15 to 5.5VDC

(3 - 2) Current Consumption: 0.5mA (1mA max.)

(3 - 3) Operating Range: 0 to 60deg.C
below 95%rh (no condensation)

(3 - 4) Humidity Detecting Range: 10 to 90%rh

(3 - 5) Storage: -20 to 70deg.C
below 95%rh (no condensation)

(3 - 6) Accuracy (Humidity): +/-3%rh (at 25deg.C, 50%rh,Vin=3.15～5.5VDC)
Voltage Range: 1.55to1.75VDC

(3 - 7) Humidity Output Signal (Reference): at 25 deg.C,Vin=3.15～5.5VDC

Humidity (%rh)	10	20	30	40	50	60	70	80	90
Output Voltage (V)	0.33	0.66	0.99	1.32	1.65	1.98	2.31	2.64	2.97

Output Impedance approx.: 0.2 kΩ

Standard characteristics: Page8 /Fig. 2

(3 - 8) Temperature Output Signal: Thermistor
R(25℃)=10kΩ+/-5%
B-value(25/50)=3380K+/-1%

Temperature(℃)	0	10	20	25	30	40	50	60
Resistance(kΩ)	27.22	17.93	12.08	10.00	8.315	5.834	4.161	3.014

(3 - 9) Accuracy Humidity(Reference): at 25 deg. C, Vin=3.15 to 5.5VDC

Humidity (%rh)	30	40	50	80
Output Voltage (V)	0.99	1.32	1.65	2.64
Accuracy (%rh)	(+/-5)	(+/-4)	+/-3	(+/-6)

3. Standard measurement condition

Test condition: Ambient temp. 25deg.C, Supply Voltage 5.00VDC

The output voltage of modules to be measured after leaving modules under 0%rh circumstance for 15min., and 50%rh circumstance for another 15min..

<Measurement instruments>

*Divided flow type accurate Humidity Generator Model SRH-1 (SHINYEI).

*Voltage meter.

5. Reliability test

No.	ITEM	METHOD	REQUIREMENT
1	Impact test	Drop module 3times at random on to a hard wooden plate from 1 meter above high.	No breakage, nor cracks. Should be electrically normal.
2	Vibration test	Vibration test in X-Y-Z axis for half an hour. Under10-55Hz frequency, 1.5mm(10-55-10Hz) amplitude.	No breakage, nor cracks. Should be electrically normal.
3	Heat resistance	Leave module in an ambient of 70 deg. C and 30%rh max. for 1000 hours.	Within +/-5%rh
4	Cool resistance	Leave module in an ambient of –20 deg. C and 30%rh max. for 1000 hours.	Within +/-5%rh
5	Humidity resistance	Leave module in an ambient of 40 deg. C and 95%rh for 1000 hours.	Within +/-5%rh
6	Temperature cycle test	300 cycles. The 1cycle is to leave under 0 deg. C for 1 hour and raise ambient temp. 60 deg. C in next 1hour, then after leaving another 1 hour under 60 deg. C, lower temp. 0 deg. C in next 1 hour.	Within +/-5%rh

Remark:1) All standard figures are based on humidity variation under 50%rh (25deg.C)

2) Upon completion of all tests, module should be left under normal room condition for 24hours.

6. Inspection method

(6 - 1) Method : Sampling inspection (Sampling size 9pcs/3000pcs.maximum lot qty)

(6 - 2) Inspection Items

A. Appearance Inspection

Article	Method	Standard
Appearance	Visual	• No rough dirt • Sensor cap attached properly. • No loose parts
Dimension	Slide calipers Scales	Dimensional specifications in Fig.1 of page 7.

B. Characteristic inspection

Inspection method

Check both outputs the voltage of Humidity Sensor and the resistance of thermistor in an ambient of 50%rh and 25 deg. C

Test system : Divided flow type Humidity Generator type SRH-1, SHINYEI.

Digital Multimeter

Standard specs.

Monitored output voltage on Humidity Sensor and resistance value on Thermistor should stay within the specified accuracy.

Humidity : +/-3%rh at 50%rh, 25deg.C (standard :1.55 to 1.75V)

Temperature : 10kΩ+/-5% at 25deg.C (standard : 9.5 to 10.5kohm)

Inspection data

The measured voltage and resistance values should be filled in inspection report.

7. Packing

(1) 40pcs of module are placed in a tray.

(2) 25sheets (1000pcs of Module) to be packed in a shipping carton box (size :370×290×330mm).
In case of fractional packing, the above bag and carton box may not be used.

8. Caution remarks on operation

(1) Please keep sensors away from dewfall and drenching.

(2) Please do not use humidity sensors in the following environment.

(a) Saline gas

(b) Inorganic gas Sulfide dioxide , Chlorine , Ammonium , etc.

(c) Organic gas Alcoholic , Glycols , Aldehydes , etc.

(3) Recommendable storage condition

Temperature range 10 to 40deg.C

Humidity range 60%rh max.

(4) Please do not store humidity sensors for long period of time in over 60deg.C ambient due to some degradation on sensor housing might be caused.

9. Specific Material

(1) The specific material as Mercury, Lead, Cadmium and Hexavalant Chromium are not contained.
Remark: The lead in glass is excluded as on the RoHS exemption ANNEX.

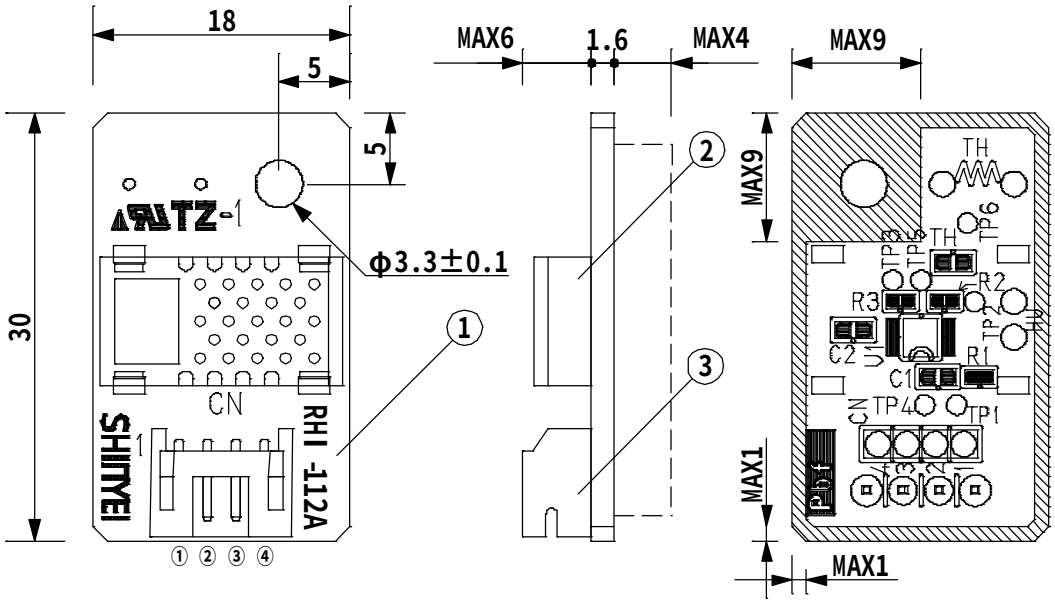
(2) Possibility of any specific material which bromine flame resistant materials
The following materials are also excluded in this product.

Subject material

PBBOs: PBDO, PBDPO, PBDE, PBDPE

PBBs

Fig.1 Configuration & Parts (Model :RHI-112A)



指定のない寸法精度±0.5mm (UNIT mm)
Tolerance is ±0.5mm unless otherwise specified.

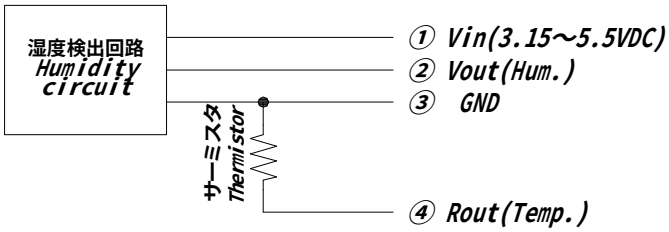
Main parts

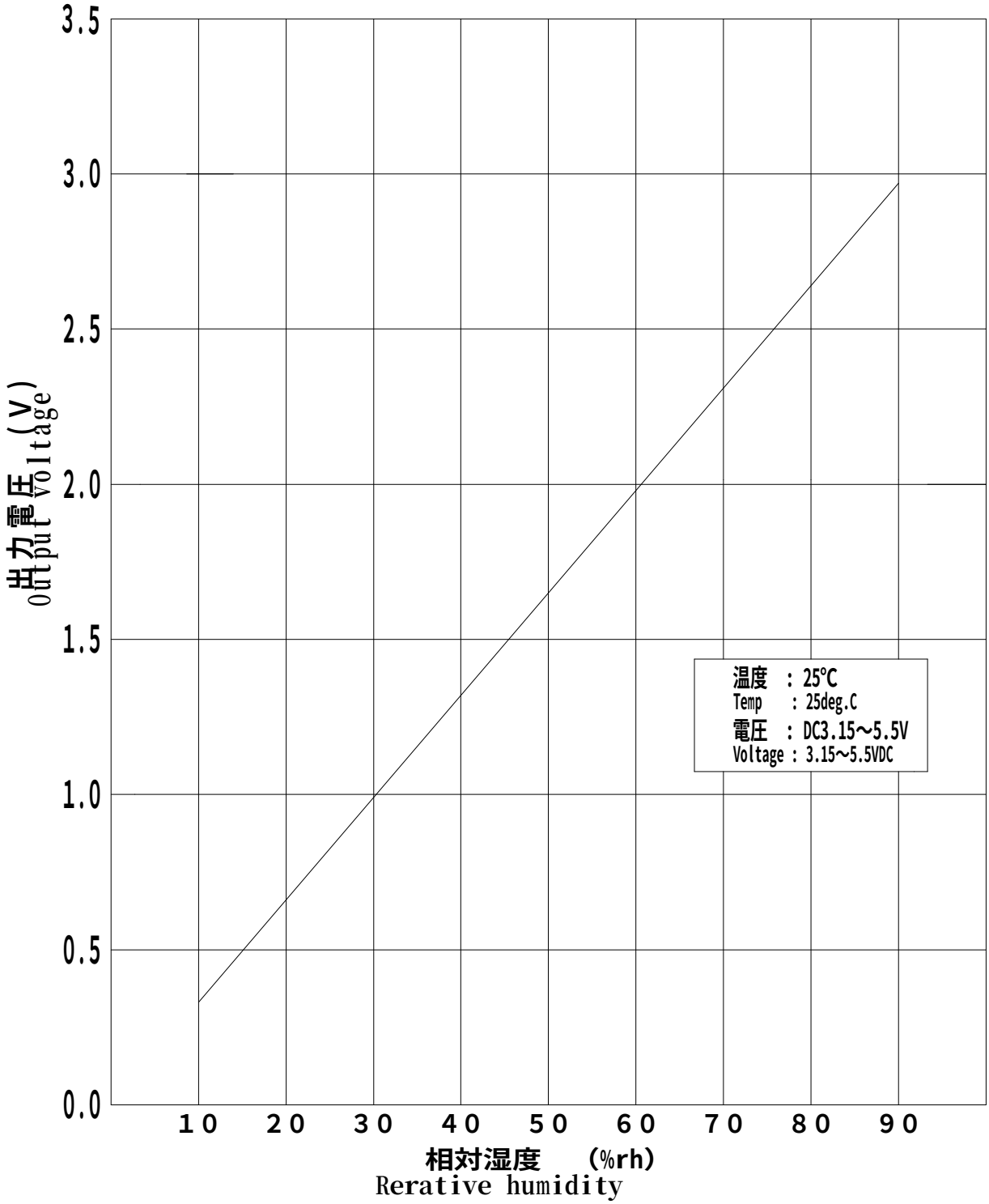
No.	Parts	Reference
1	Printed board	Material:P.P,1.6mm thk.
2	Humidity sensor HPR-MQ-M53R Sensor case FC-6-2	Material: ABS
3	Connector S4B-PH-K-S(LF)(SN)	JST

Terminal Connection

Terminal	Content
1	Power source 3.15 to 5VDC
2	Humidity output (voltage0～3.3VDC)
3	GND, Temperature output 2(Resistance)
4	10kohm(at25℃) Temperature output 1(Resistance)

Application




3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
出力電圧 Voltage (V)
Output
温度 : 25℃
Temp : 25deg.C
電圧 : DC3.15～5.5V
Voltage : 3.15～5.5VDC
10 20 30 40 50 60 70 80 90
相対湿度 (%rh)
Rerative humidity