

HMZ-433A1 module consist of an HCZ sensor, temperature sensor and integrated circuit to provide a linear DC Voltage output for 0-100%RH to enable easy user application of the HCZ sensor.

### Features

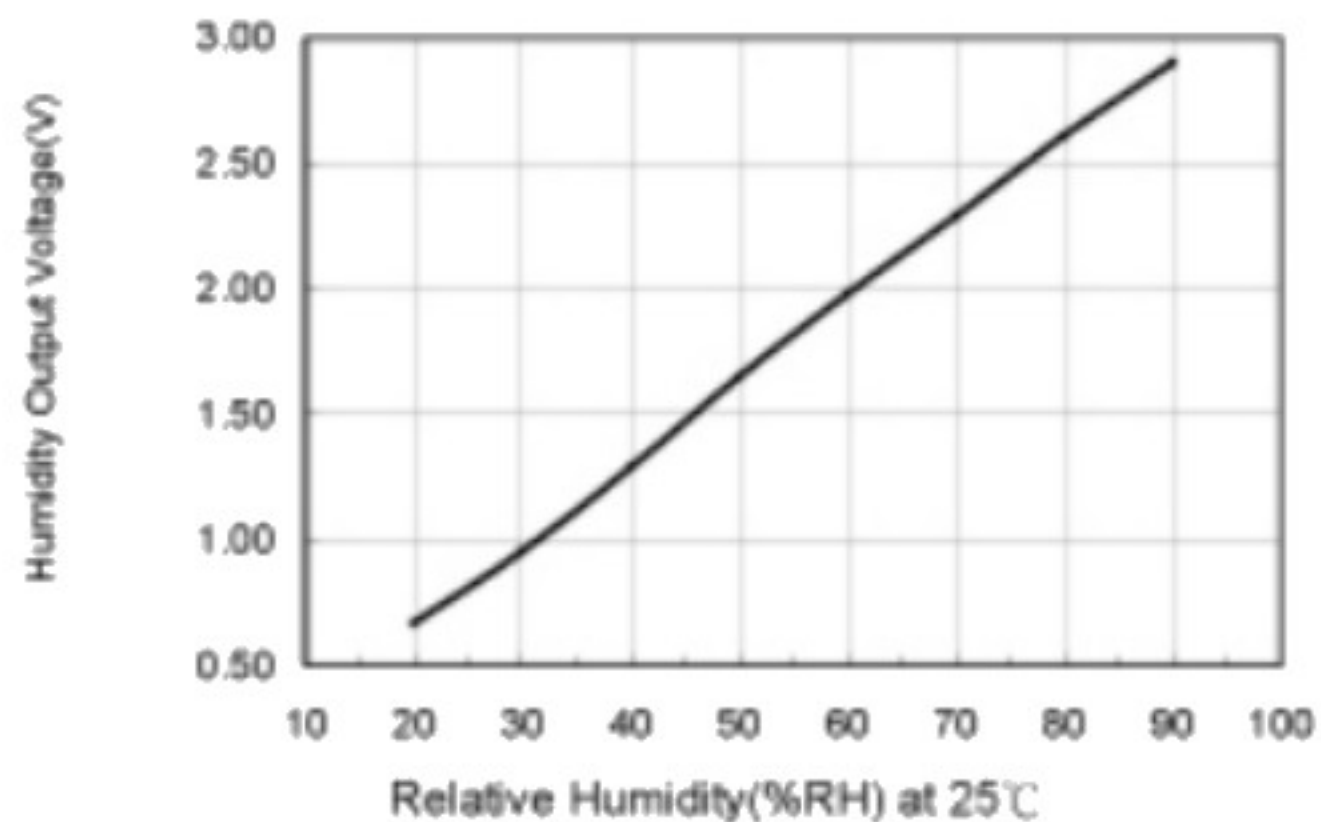
- Good long-term stability
- Small chip size
- High performance and reliability
- Wide humidity detect range
- RoHS compliant
- Very low cost



### Applications

- Air conditioner, Humidifier, Dehumidifier
- Dry box
- Hygrometer, Recorder
- Weather forecast equipment
- Copier, printer
- Automobile

### Typical R-T Curve



### Specifications

Supply voltage (Vin)	5VDC±5%
Current consumption	5mA max :(2mA avg.)
Operating temperature	0 to 60°C
Operating humidity	95%RH or less
Storage temperature	-20 to 70°C
Storage humidity	95%RH or less
Humidity transmitting Range	20 to 90%RH
Humidity accuracy	±5%RH at 25°C , 60%RH , Vin=5.00VDC
Humidity output	0~3.3VDC At 25°C ,Vin=5.00VDC
Temperature output	Using thermistor 503 R(25°C)=50KΩ±1%, B(25/85)=3950K±1%

HMZ-433A1 Humidity module specifications

1. Application range :

The HMZ-433A1 module consist of an HCZ sensor and integrated circuit to provide a linear DC Voltage for 0-100%RH to enable easy user application of the HCZ sensor. They are specifically designed for use appliances and controllers.

Feature	Application
Wide humidity operation range	Air condition ,humidifier, Dehumidifier.
Linear DC Output	Humidity controller, Humidity transmitter.
Easy operation	Hygrometer, Hygro-recorder.
Long-term stability	Copying machine.
Small and economical	Clock ,Weather-forecast barometer.

2. Electrical characteristics :

2.1 Sensing element (Humidity) : HMZ-433A1 Humidity sensor “ GHITRON HCZ sensor“

2.2 Supply Voltage(Vin) : 5VDC±5%

2.3 Current Consumption : 5mA max:(2mA avg.)

2.4 Operating Range

Temperature : 0 to 60°C

Humidity : 95%RH or less

2.5 Storage

Temperature : -20 to 70°C

Humidity : 95%RH or less

2.6 Humidity transmitting

Range : 20 to 90%RH

2.7 Accuracy :

Temperature : Resistance(1%) : 50±0.5KΩ(at 25±0.2°C)

Humidity : ±5%RH (at 25°C, 50%RH, Vin=5.00VDC)

2.8 Humidity Output 0~3.3V At 25°C, Vin=5.00VDC

Signal(Reference) : (Output Impedance approx:5KΩ)

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

2.9 Temperature Output

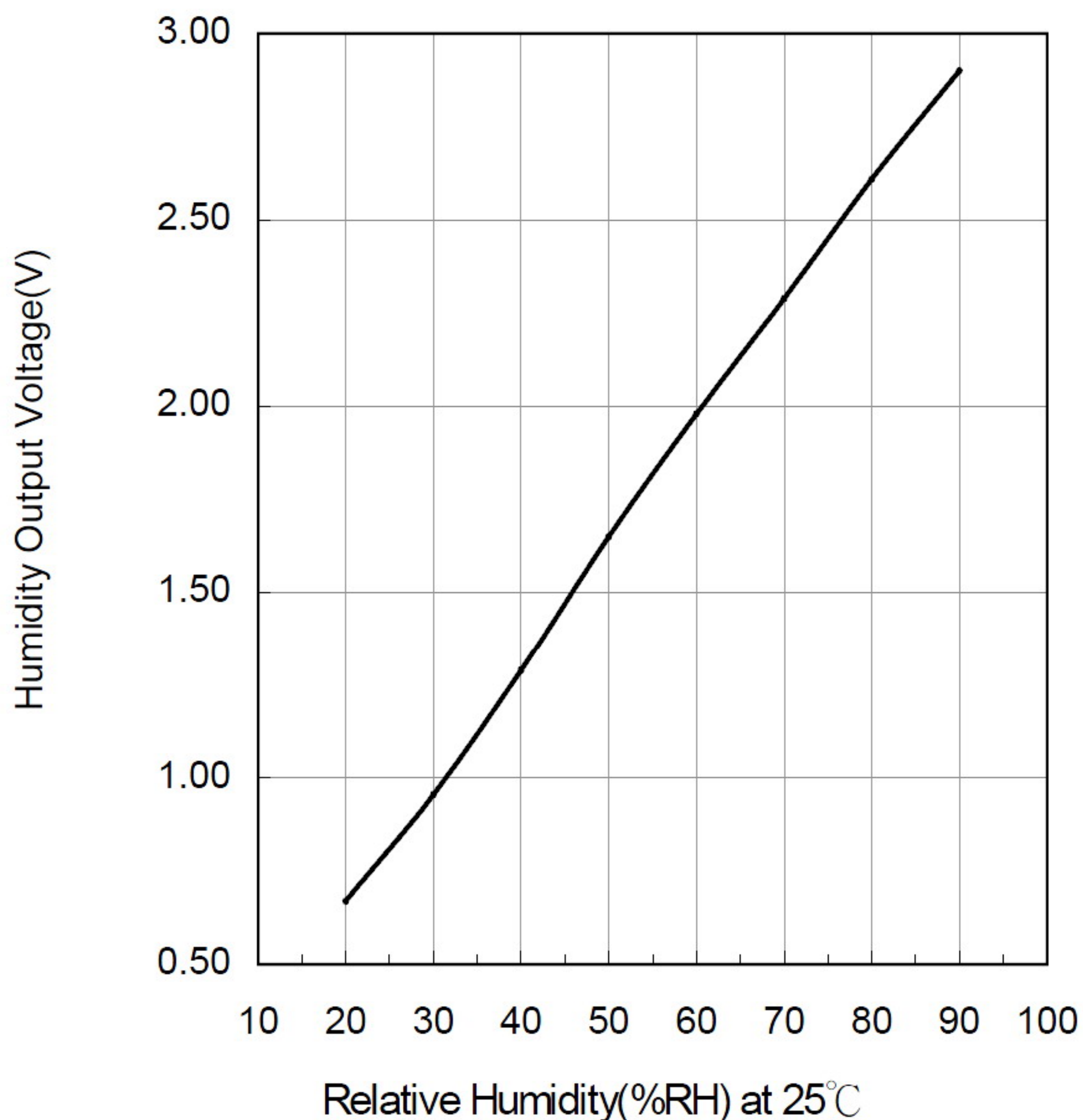
Using thermistor 503 R(25°C)=50KΩ±1%,

Signal(Reference) : B(25/85)=3950K±1%

Temperature(°C)	0	10	20	25	30	40	50	60
Resistance(KΩ)	160.56	98.714	62.328	50.0	40.356	26.756	18.138	12.554

2.10 Humidity Output 0~3.3V characteristics :

## HMZ-433A1 Humidity Output 0~3.3V characteristics



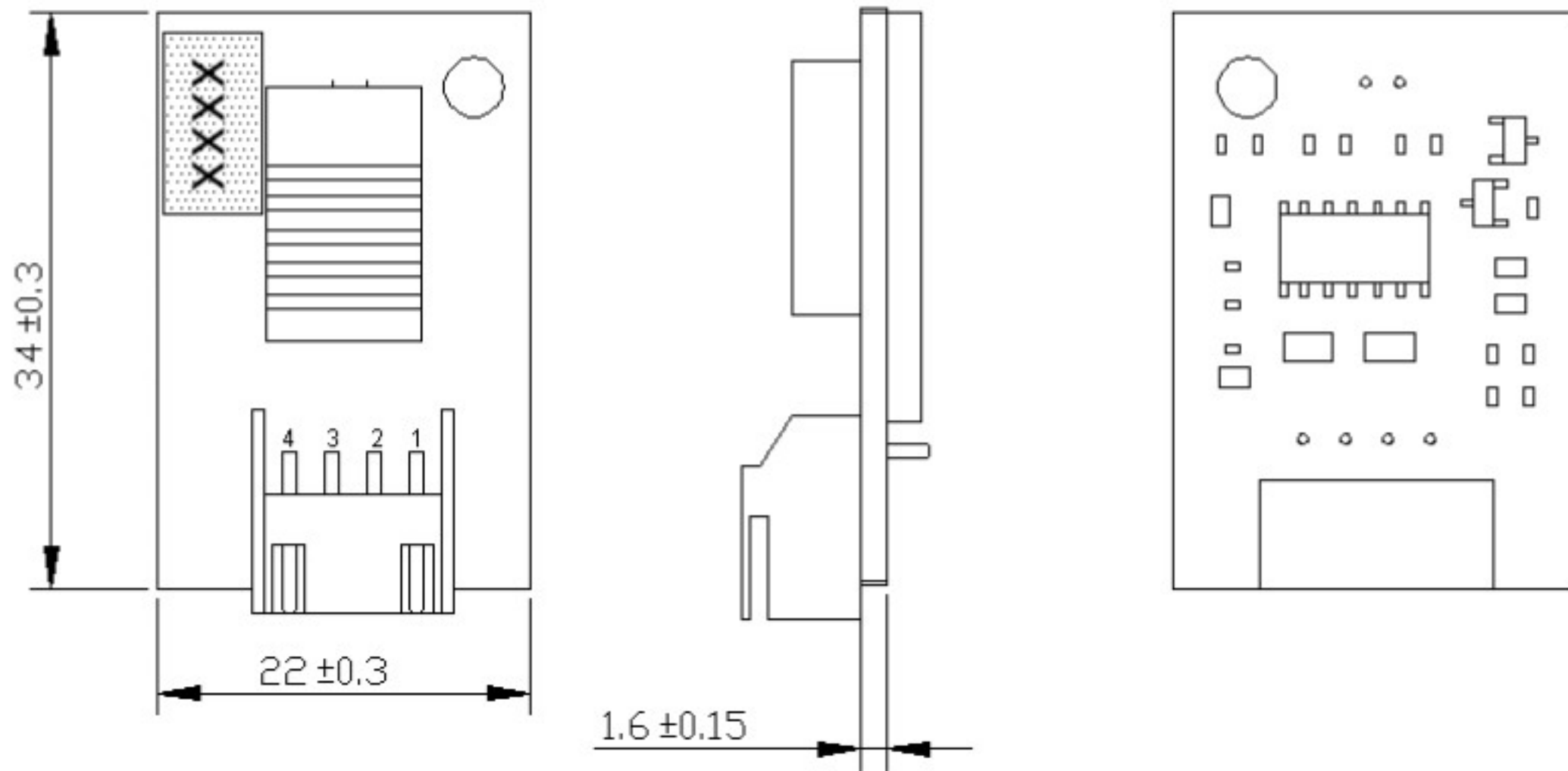
### 2.11 HMZ module Humidity Output 0~3.3V v.s Temperature characteristics :

	10°C	15°C	20°C	25°C	30°C	35°C	40°C
20%RH	0.75	0.72	0.69	0.66	0.62	0.59	0.55
30%RH	1.03	1.00	1.00	0.99	0.96	0.93	0.90
40%RH	1.32	1.30	1.31	1.32	1.30	1.28	1.25
50%RH	1.64	1.63	1.64	1.65	1.64	1.63	1.61
60%RH	1.97	1.97	1.98	1.98	1.98	1.98	1.96
70%RH	2.30	2.30	2.31	2.31	2.31	2.31	2.30
80%RH	2.64	2.64	2.63	2.64	2.63	2.63	2.61
90%RH	2.97	2.96	2.94	2.97	2.94	2.92	2.90

Remark : Accuracy :  $\pm 5\%$ RH(at 25°C , 60%RH , Vin=5.00VDC)

Output range : 1.815~2.145V(55%RH~65%RH Output)

### 3. Configuration & Dimensions (Units :mm) : Model No. HMZ-433A1 Drawing



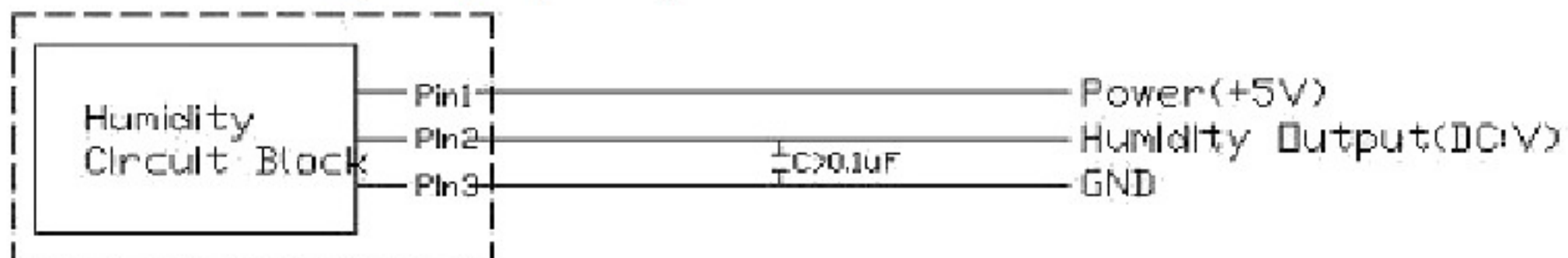
#### 3.1 Terminal Connection :

Terminal	Content. (4Pin Pitch : 2.5mm)
Pin1	Power Source 5V DC.
Pin2	Humidity Output
Pin3	GND
Pin4	Temp Output $50k\Omega$ (at $25^{\circ}C$ )

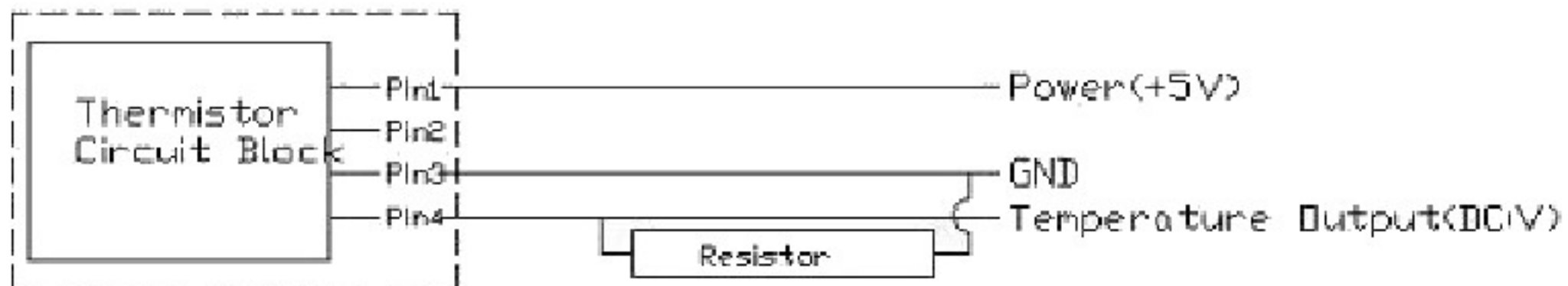
Remark : Please pay attention to the power source and GND polarity position.

### 4. Typical Applications :

#### 4.1 Pin2 Humidity output (DC:V)



#### 4.2 Pin4 Thermistor output (DC:V)



5. Order Form :

HMZ—433A1 is the module with 2317RJ-04 4 pins(pitch = 2.5 mm) of terminal Connector of voltage output for humidity and temperature output 50KΩ (at 25°C) .

HMZ-433A1 Configure of definition.	
Input Voltage	5V
Humidity Output Voltage	0~3.3V
Temperature Output	50kΩ (at 25°C) . (*Note1*)
Terminal Connector	2317RJ-04 , 4pins , (Pitch = 2.5 mm) .
Accuracy	±5%RH(at 25°C , 60%RH, Vin=5.00VDC)
Sensing element (Humidity) :	Humidity sensor “ GHITRON HCZ sensor“
Output Range :	20~90%RH

(\*Note1\*) Optional type

Part_No.	NTC Configure of definition.
HMZ-433A1	50kΩ , SMD (Default type)
HMZ-433A1N	NA
HMZ-433A1D	50kΩ , DIP

6. Reliability test :

No.	ITEM	METHOD	REQUIREMENT
6.1	Impact test	To drop Module 3time at random on to a hard wooden plate from 1meter above high.	No breakage, nor cracks. Should be electrically normal
6.2	Vibration test	Vibration test in X-Y-Z axis for 30min.under 10-55Hz frequency, 1.5mm(10-55-10Hz) amplitude.	No breakage, nor cracks. Should be electrically normal
6.3	Humidity resistance	1000 hours@ 60°C, 90%RH .	△%RH < ±5%RH
6.4	Cool resistance	1000 hours@ -30°C	△%RH < ±5%RH
6-5	Temperature cycle test	Repeat 100 cycles , Each cycle: 30 minutes@-30°C 30 minutes@85°C	△%RH < ±5%RH
6.6	Loading test	Room Temperature / Humidity , Input +5V. for 1000hours.	△%RH < ±5%RH

Remarks :

- (1) All standard figures are based on humidity variation under 60%RH(25°C)
- (2) Upon completion of all tests, The module will be left over under nominal environment and humidity for 24hours.

7. Packing :

There are 50 pieces of modules to be packed in one tray.

8. Caution remarks on operation :

8.1 To avoid direct application of DC voltage on humidity sensor.

8.2 To protect sensor from dewfall and drenching.

8.3 To avoid and operation of humidity sensors in the following environmental ambient.

8.3.1 Salt

8.3.2 Inorganic gas Sulfide dioxide, Chlorine, Ammonium, etc.

8.3.3 Organic gas Alcoholic, Glycols, Aldehydes, etc.

8.4 Recommendable storage condition :

Temperature range 10~40°C

Humidity Range 90%RH or Less.

8.5 Do not store humidity sensors long period of time in an 60°C ambient, due to some occasion of degradation on sensor housing case.

Remark : We have the right to revise specification and product configurations without notice.