

HMZ-433A1 Humidity module specifications

1. Application range :

The HMZ-433A1 module consists 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, 60%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

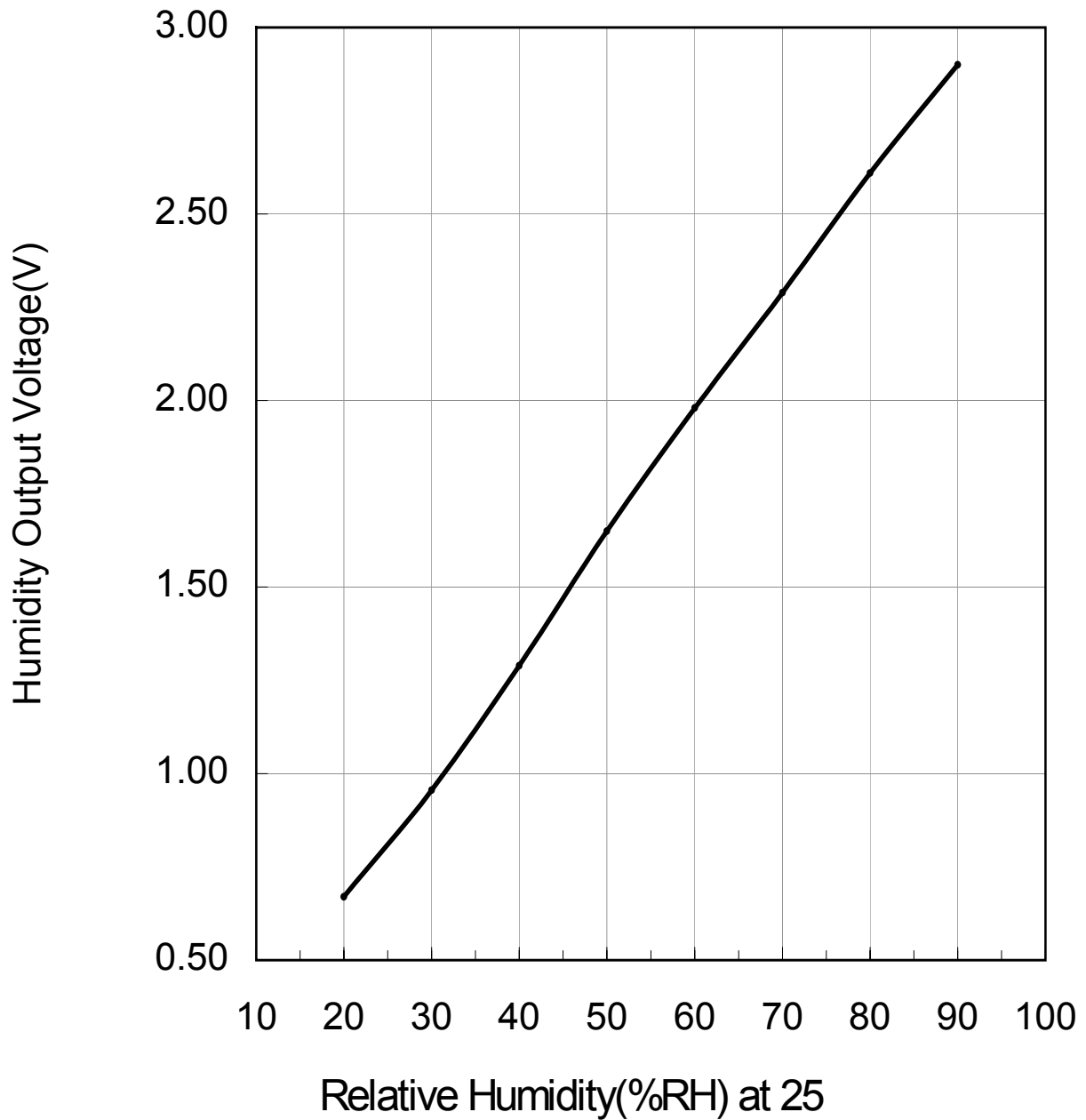
Using thermistor 503 R(25°C)=50KΩ±1%,

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



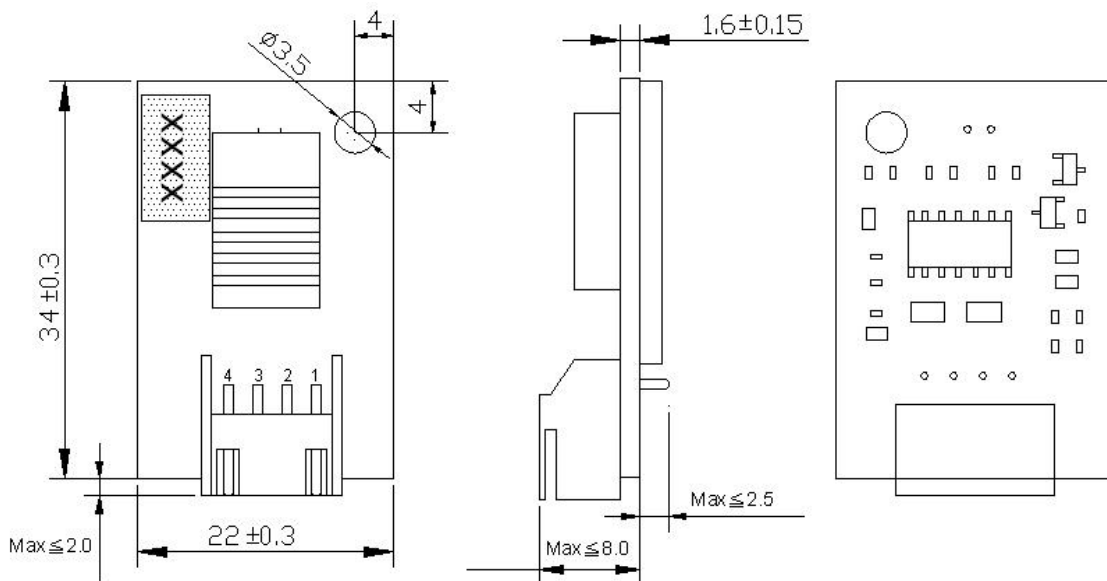
2.11 HMZ module Humidity Output 0~3.3V v.s Temperature characteristics :

| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
|-------|------|------|------|------|------|------|------|
| 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 , 60% RH , $V_{in}=5.00VDC$)

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

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



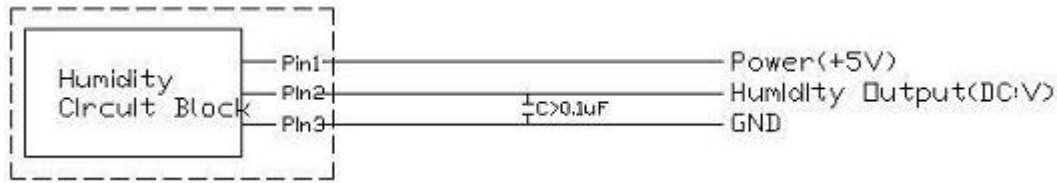
3.1 Terminal Connection :

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

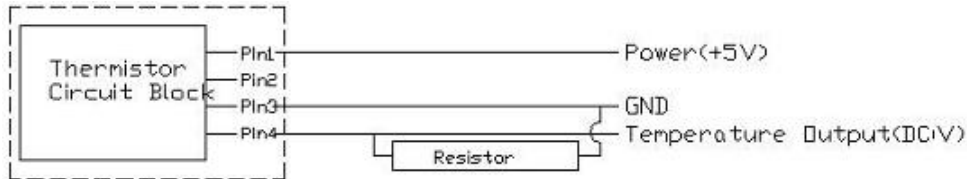
Remark : Please pay attention to the power source and GND polarity position.

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) . |
| 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“ |

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 △%RH < ±5%RH |
| 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 △%RH < ±5%RH |
| 6.3 | Heat resistance | 1000 hours@ 70 | △%RH < ±5%RH |
| 6.4 | Cool resistance | 1000 hours@ -30 | △%RH < ±5%RH |
| 6.5 | Humidity resistance | 1000 hours@ 60 / 90%RH. | △%RH < ±5%RH |
| 6-6 | Temperature cycle test | Repeat 100 cycles , Each cycle: 30 minutes@-30 /30 minutes@85 | △%RH < ±5%RH |
| 6.7 | 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

Humidity Range 90%RH or Less.

8.5 Do not store humidity sensors long period of time in an 70 ambient, due to some occasion of degradation on sensor housing case.

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