SN-HMD
Humidity Sensor

User's Manual

V1.2

April 2009

Index

1. INTRODUCTION AND OVERVIEW

Humidity sensor is a device consisting of a special plastic material whose electrical characteristics change according to the amount of humidity in the air. Basically it is a sensor that senses the amount of water vapor in air. The module of HSM-20G is essential for those applications where the relative humidity can be converted to standard voltage output. The applications include:

- Humidifiers & dehumidifiers
- Air-conditioner
- Humidity data loggers
- Automotive climate control
- Other applications

The product features include:

- Voltage analog output for both humidity and temperature.
- Small size makes it easy to conceal
- Compatible with all types of microcontrollers
- High sensitivity to humidity in the air

2. PRODUCT SPECIFICATION

2.1 The specifications of humidity sensor

No.	Specification	Humidity Sensor
1.	Input voltage range	DC 5.0±0.2 V
2.	Output voltage range	DC 1.0—3.0 V
3.	Measurement Accuracy	±5% RH
4.	Operating Current (Maximum)	2mA
5.	Storage RH Range	0 to 99% RH
6.	Operating RH Range	20 to 95% (100% RH intermittent)
7.	Transient Condensation	< 3%RH
8.	Temperature Range: - Storage - Operating	20℃ to 70℃ 0℃ to 50℃
9.	Hysteresis (RH @ 25℃)	MAX 2%RH
10.	Long Term Stability (typical drift per year)	±1.5%
11.	Linearity	Linearity
12.	Time Response (63% step change)	1 min
13.	Dimensions (L*W)	30mm*22mm

Table 2.1

2.2 Pin Definitions and Ratings

Pin	Name	Function
-	GND	Connects to Ground
H	Humudity Output	Voltage analog output.
+	Vcc	Connects to Vcc (+5V)
T	Temperature Output	Voltage analog output.

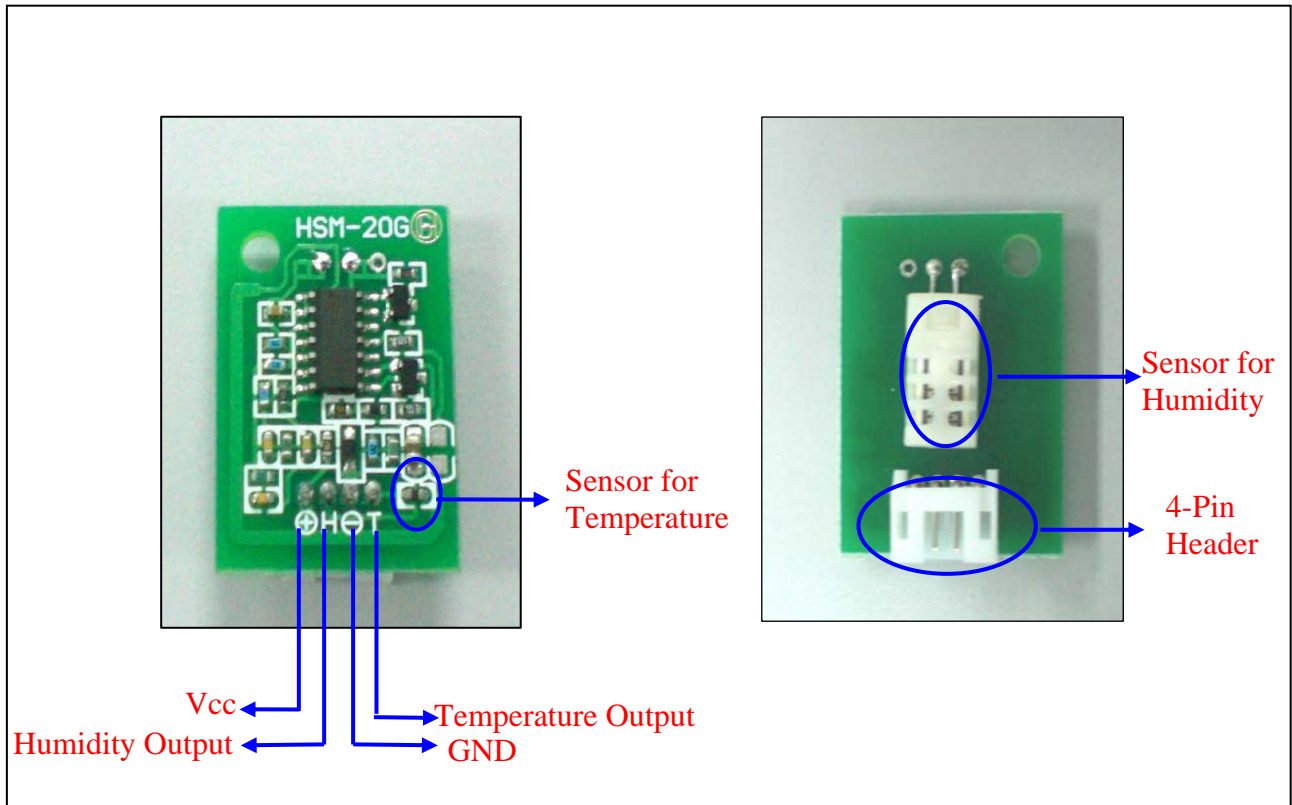Note: Please refer Getting Started for the pin connection

Table 2.2

3. PRODUCT LAYOUT

Figure 3.1

Label	Description
Vcc	The power supply to the sensor.
Humidity Output	The analog output of Humidity for the sensor.
GND	The Ground of the sensor.
Temperature Output	The analog output of Temperature for the sensor.
Sensor for Temperature	The sensor to sense the temperature.
Sensor for Humidity	The sensor to sense the humidity.
4-Pin Header	The connector to the cable which connect to testing/microcontroller circuit.

Table 3.1

4. GETTING STARTED

4.1 Connecting and Testing

To use the Humidity Sensor, users have to build a connector cable to connect the sensor to the PCB circuit. Connect the 4-pin header to your circuit so that the (-) pin connects to ground, the (+) pin connects to Vcc, H pin and T pin connects to your microcontroller's I/O pin. The microcontroller's I/O pin needs to be set to ADC mode. The circuit in Figure 4.1 shows the example circuit for humidity sensor. The relationship between output voltage and temperature shows in Figure 4.2. Please take note that when the temperature is higher than 45℃, the output voltage becomes unstable.
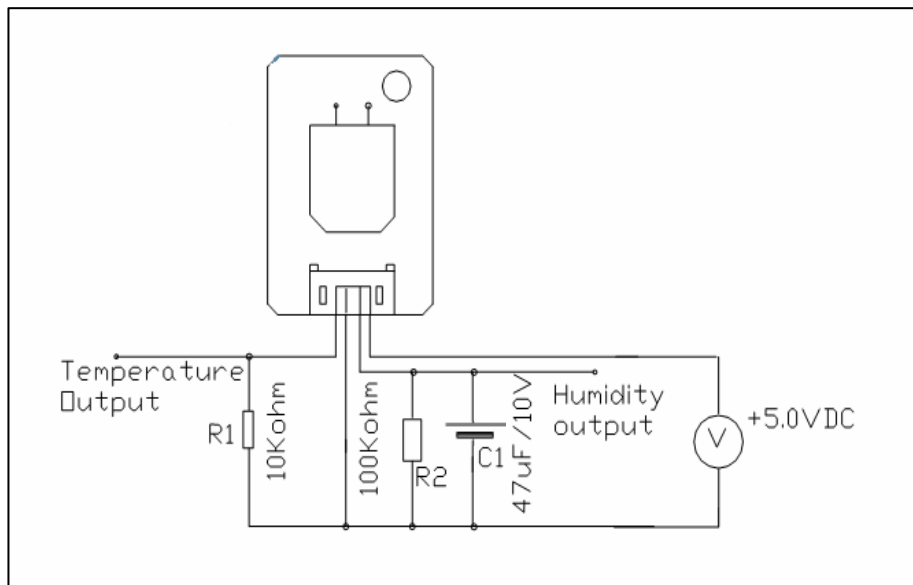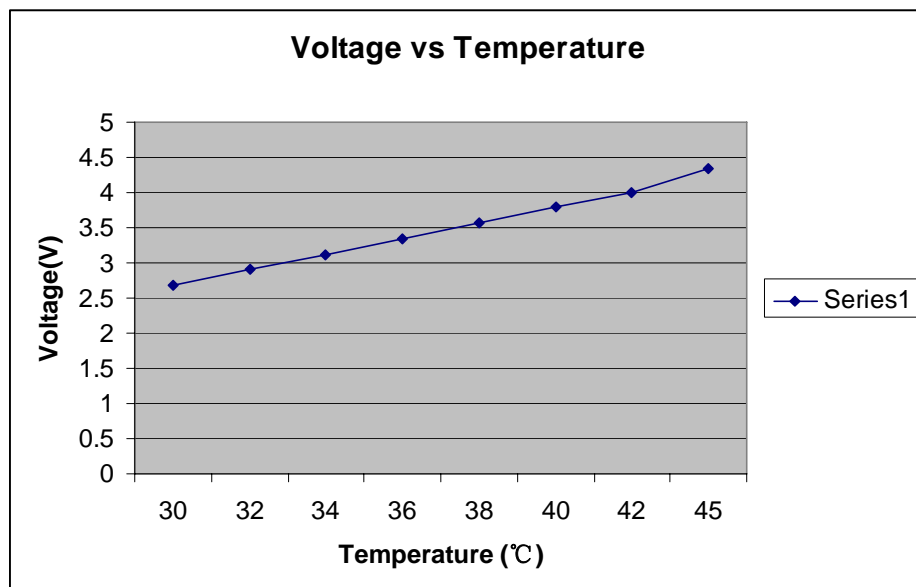
Figure 4.1

Figure 4.2

Figure 4.3 shows the relationship between output voltage and humidity while Table 4.1 shows the standard characteristics of the humidity sensor.
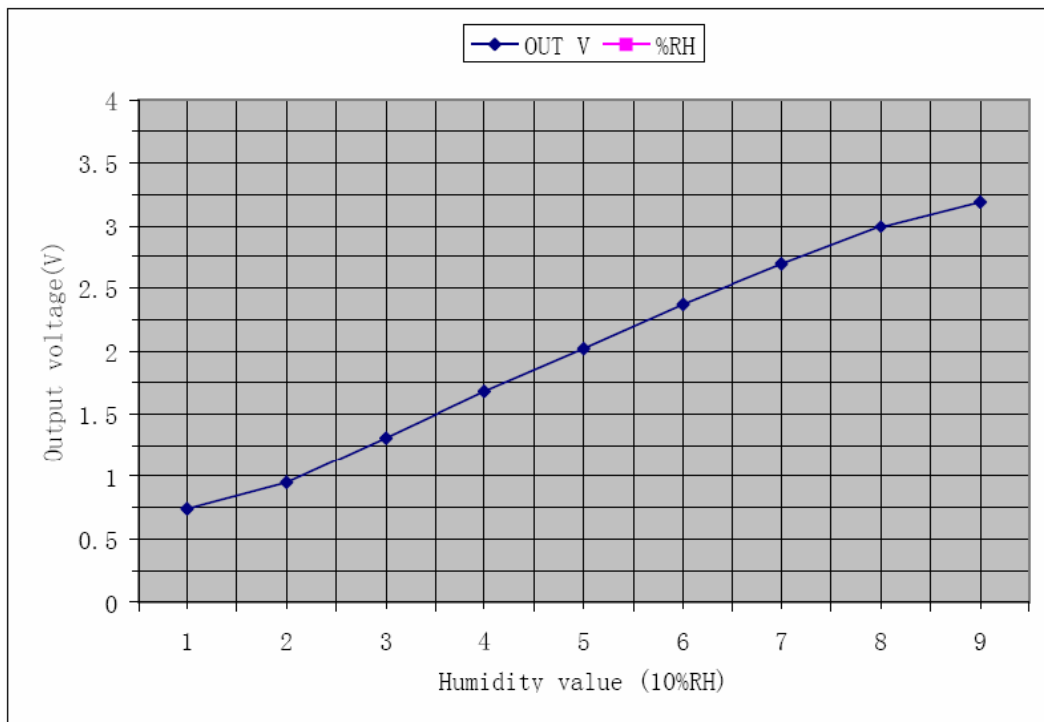

Figure 4.2

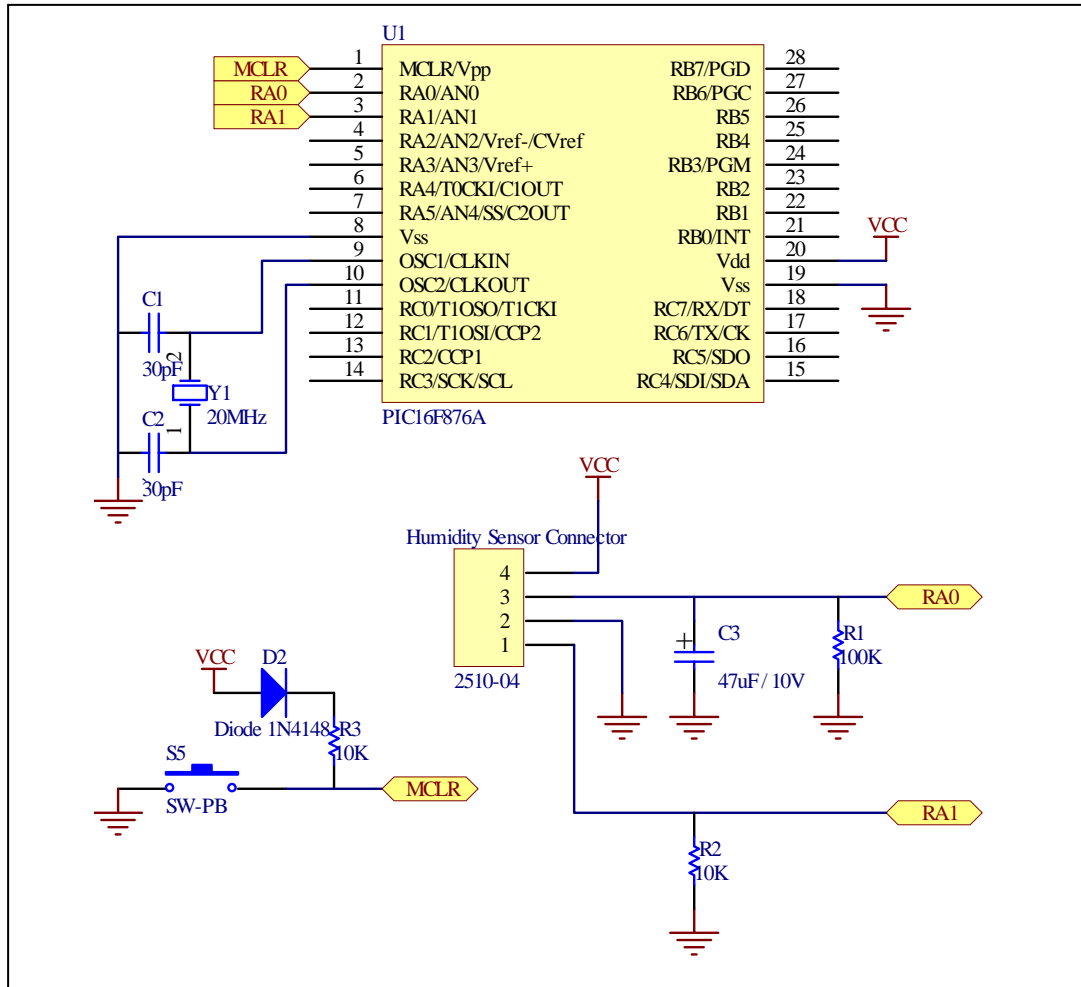| %RH	10	20	30	40	50	60	70	80	90
OutpotV	0.74	0.95	1.31	1.68	2.02	2.37	2.69	2.99	3.19

Table 4.1

Figure 4.4

Figure 4.4 shows the connection of humidity sensor to PIC microcontroller, which is PIC16F876A. The voltage supply (VCC) of the circuit is 5V. The voltage analog output of humidity (H) is connected to RA0 (AN0) while the voltage analog output of temperature (T) is connected to RA1 (AN1). However, user is free to choose any type of microcontroller, just have to make sure that both of the voltage analog outputs of humidity sensor are connected to the ADC (Analog Digital Convector) pin of that particular microcontroller. For more details of example application, please refer Cytron product, PR15 which can be found in the web site: www.cytron.com.my .

5. WARRANTY

- ➢ Product warranty is valid for 6 months.
- ➢ Warranty only applies to manufacturing defect.
- ➢ Damage caused by miss-use is not covered under warranty.
- ➢ Warranty does not cover freight cost for both ways.

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