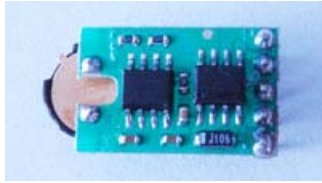


**HUMIDITY SENSOR MODULE**

2006-12-14

PRELIMINARY

Version: 1.0



- Relative humidity sensor
- Two point calibrated with capacitor type sensor, excellent performance
- Frequency output type, can be easily integrated with user application system
- Very low power consumption
- No extra components needed

**Summary**

The HH10D relative humidity sensor module is comprised with a capacitive type humidity sensor, a CMOS capacitor to frequency converter and an EEPROM used to holding the calibration factors. Due to the characteristics of capacitor type humidity sensor, the system can respond to humidity change very fast. Each sensor is calibrated twice at two different accurate humidity chambers, two unique sensor related coefficients are stored onto the EEPROM on the module. The data is used for humidity calculation.

**FEATURES**

- Relative humidity sensor
- Two point calibrated with capacitor type sensor, excellent performance
- Frequency output type, can be easily integrated with user application system
- Very low power consumption
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**Applications**

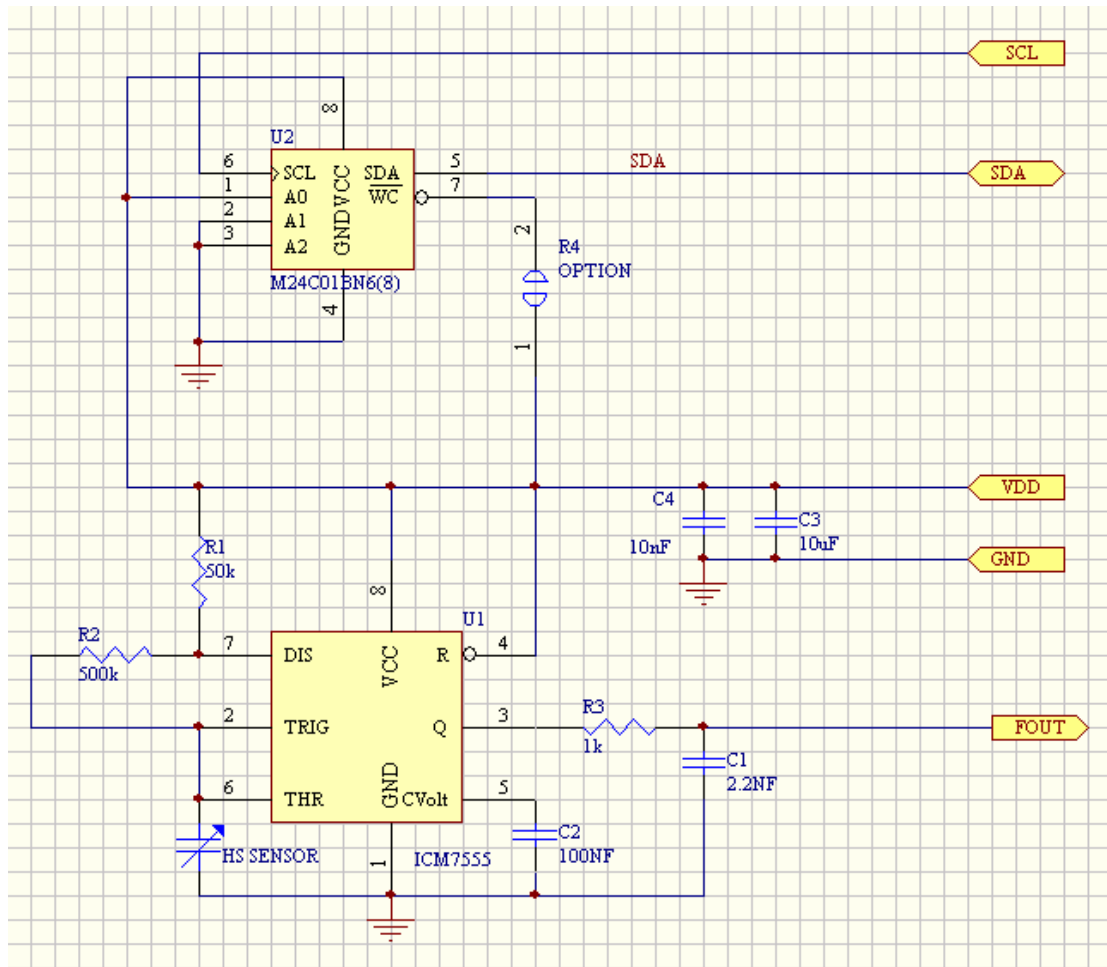
- HVAC
- Consumer Goods
- Dehumidifiers
- Test & measurement
- Automation
- Automotive
- Weather Stations
- Humidifiers
- Data Logging
- White Goods- Medical

# HUMIDITY SENSOR MODULE

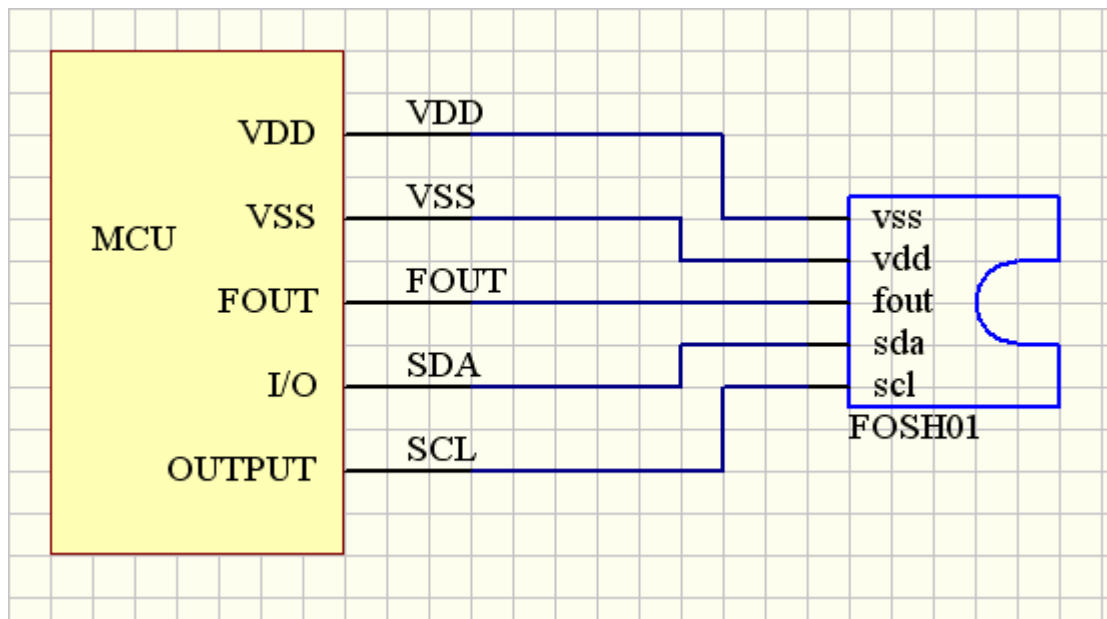
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Circuit Diagram



Application Circuit

**HUMIDITY SENSOR MODULE**

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**Sensor Performance Specification**

Parameters	Conditions	Min	Typ	Max	Units
Resolution		0.3	0.08	0.05	%
Accuracy			3		%
Repeatability		-0.3		0.3	%
Uncertainty			2		%
Range		0		99	%
Response Time			8		S
Hysteris			1		%
Long Term Stability		-0.5		0.5	%
Interchangeability		Fully Interchangeable			

**HH10D Humidity Module Characteristic**

Parameter	min	nominal	max	unit
humidity range	1		99	%
accuraccy	-3		+3	%
temperature range	-10		+60	C
working voltage	2.7	3	3.3	V
stability versus time		1%		per year
power consumption	120	150	180	uA
Output Frequency Range	5.0	6.5	10	KHZ

**Calculation**

In order to read out the correct humidity, 3 calibration factors need to be read out from the EEPROM at address of 10,12 and 14 for sensitivity, offset and TCS.

Once the frequency output from the sensor is measured, then the correct humidity value can be calculated in the following method:

**HH10D Humidity Calculation Algorithm**

Data Definition		eeeprom address
<b>sensitivity</b>	<b>sens*2<sup>12</sup></b>	<b>10</b>
<b>Offset</b>	<b>2 byte value</b>	<b>12</b>
<b>TCS</b>	<b>--</b>	<b>14</b>
<b>RH(%)=</b>	<b>(offset-Soh)*sens/2<sup>12</sup></b>	

\* RH(%) linear humidity value

\* RH\_corr temperature compensated humidity value

\* Soh is the measured frequency value at Fout port

● the eeeprom physical address is fixed to 01.

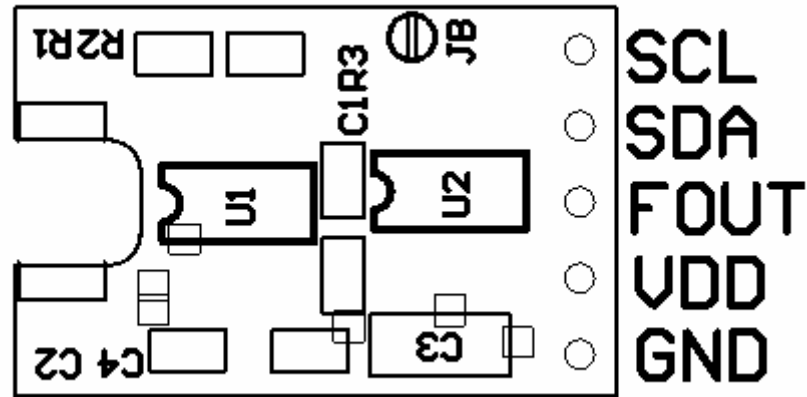
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**Module PCB Layout:**



L: 24mm  
 W: 8mm  
 Pin Pitch: 2.54mm



**HOPE MICROELECTRONICS CO.,LTD**  
 Rm B.8/F LiJingGe Emperor Regency 6012  
 ShenNan Rd., Shenzhen,China  
 Tel: 86-755-82973805  
 Fax: 86-755-82973550  
 Email: [sales@hoperf.com](mailto:sales@hoperf.com)  
[trade@hoperf.com](mailto:trade@hoperf.com)  
 Website: <http://www.hoperf.com>  
<http://www.hoperf.cn>  
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