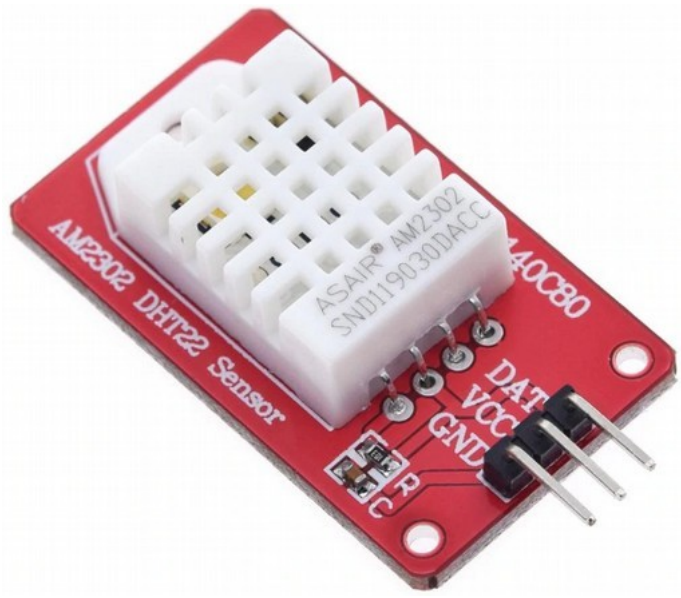
Digital relative humidity & temperature sensor AM2303

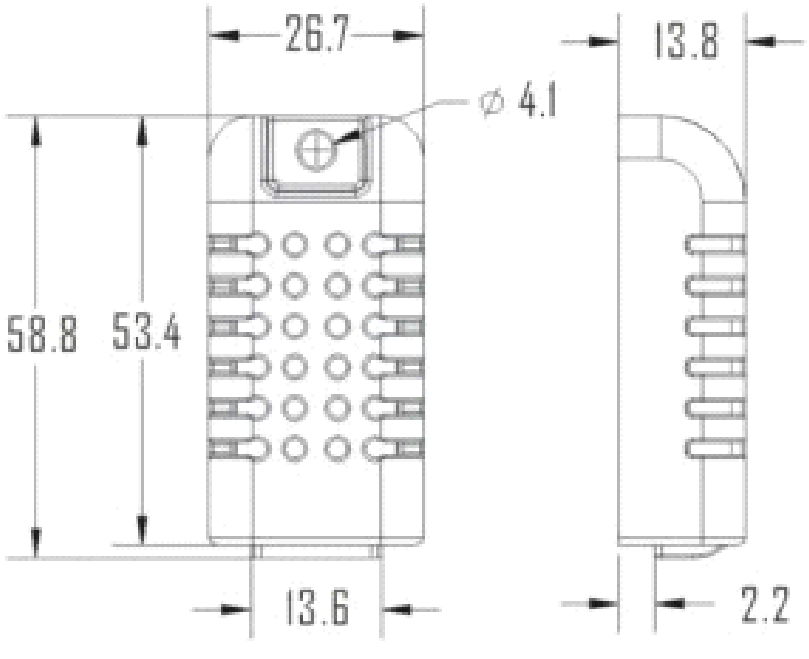


1. Technical Specification:

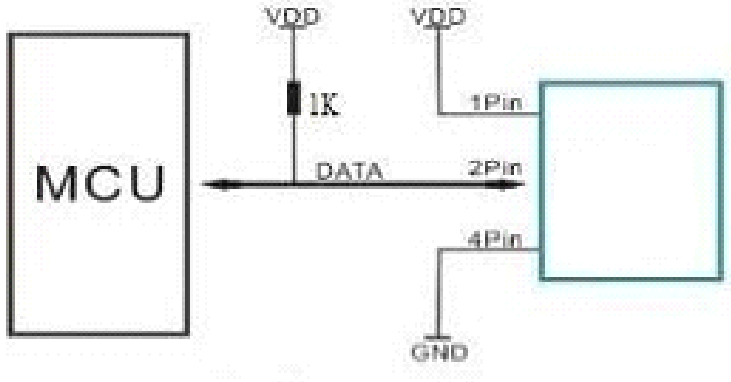
Model	AM2303
Power supply	3.3-6V DC
Output signal	digital signal via single-bus
Sensing element	Polymer humidity capacitor & DS18B20 for detecting temperature
Measuring range	humidity 0-100%RH; temperature -40~125Celsius

Accuracy	humidity +-2%RH(Max +-5%RH);	temperature +-0.2Celsius
Resolution or sensitivity	humidity 0.1%RH;	temperature 0.1Celsius
Repeatability	humidity +-1%RH;	temperature +-0.2Celsius

2. Dimensions



3. Connection diagram



4. Electrical Characteristics

Item	Condition	Min	Typical	Max	Unit
Power supply	DC	3.3	5	5.5	V
Current supply	Measuring	1.3	1.5	2.1	mA
	Average	0.5	0.8	1.1	mA
Collecting period	Second	1.7		2	Second

*Collecting period should be : >1.7 second.

Power's voltage should be 3.3-6V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

5. Communication Data

DATA=16 bits RH data+16 bits Temperature data+8 bits check-sum

Example: MCU has received 40 bits data from AM2302 as

0000 0010 1000 1100 0000 0001 0101 1111 1110 1110

16 bits RH data 16 bits T data check sum

Here we convert 16 bits RH data from binary system to decimal system,

0000 0010 1000 1100 → 652

Binary system Decimal system

RH=652/10=65.2%RH

Here we convert 16 bits T data from binary system to decimal system,

0000 0001 0101 1111 → 351

Binary system Decimal system

T=351/10=35.1℃

When highest bit of temperature is 1, it means the temperature is below 0 degree Celsius.

Example: 1000 0000 0110 0101, T= minus 10.1℃

16 bits T data

Sum=0000 0010+1000 1100+0000 0001+0101 1111=1110 1110

Check-sum=the last 8 bits of Sum=1110 1110

6. Timings and algorithm :