Temperature and Humidity Module

（**Model：ZS03**）

Manual

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ZS03 Temperature and Humidity Module

Profile

ZS03 is digital type of temperature and humidity sensor. It employs polymer resistance-type moisture sensor and NTC, and connects to a 8-byte SCM with good performance. It has advantages of high quality, quick response, strong anti-interference &etc.
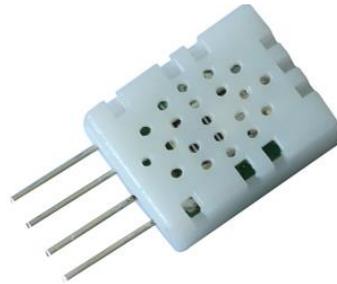
Features

    Low cost
    Low power consumption
    Small sizes
    Single wire serial interface
    Calibrated, digital output

Application

Storage, industrial production, process controlling, environment monitoring, household appliances, meteorological field

Parameters

Stable 1.

Part No.	ZS03
Detection Object	Relative humidity,temperature
Operation Voltage	3.3～5.5V DC
Detection Range	20～90%RH
Accuracy for humidity detection	±5%RH (at25℃，60%RH，Vin=3.3V)
Accuracy for temperature detection	±2℃
Operation temperature	0～60℃
Operation humidity	20～90%RH （non-condensation）
Package	Single row straight 4-pins single row

Structure

正面   背面   侧面
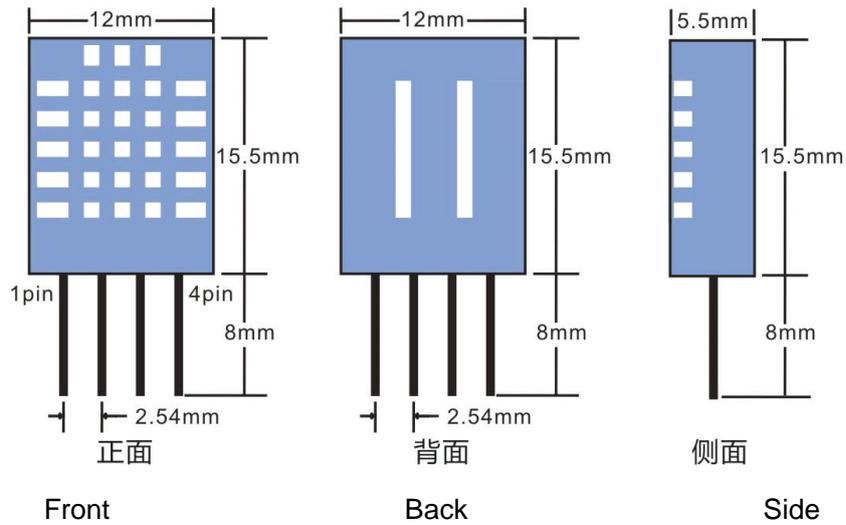
Front   Back   Side

Fig1：Structure

Pins definition

1．VDD   Power supply 3.3～5.5V DC
2．DATA   Serial data, unibus
3．NC   NULL (hang in the air)
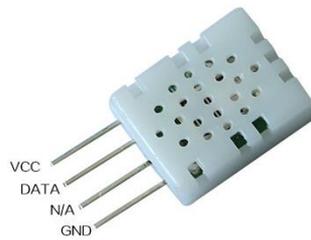4．GND   ground, power negative

Fig2. Pins

Typical circuit

If the connecting cable's length is shorter than 20 meters, 5k pull-up resistance is suggested, if longer than 20 meters, please choose suitable value for pull-up resistance according to practical application.
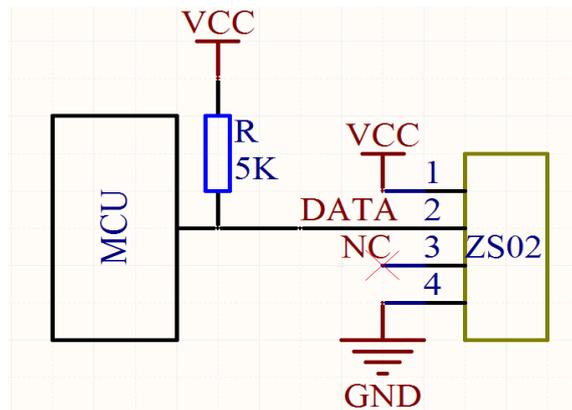

Fig3

Serial Port (Bidirectional Single Line)

DATA is used to communicate and synchronize between microprocessor and ZS02, it adopts unibus data format, one communication takes about 4ms, data includes fractional part and integral part, one complete data transportation has 40 bits, high bits first.

Data format: 8 bit humidity integral data+ 8 bit humidity decimal data

+8 bit temperature integral data + 8 bit temperature decimal data

+8 bit checksum

If data transportation is correct, checksum is equal to the end 8 bits of the value of "8 bit humidity integral data+ 8 bit humidity decimal data+8 bit temperature integral data + 8 bit temperature decimal data "

Communication Process

Idle state of bus is high level, host pull down the bus to wait ZS02's response, the continue time must be longer than 18 ms to ensure ZS02 can detect the start signal. ZS02 receives the start signal from host, wait for the moment when the start signal ends, then send 80us low level response signal. After host sending start signal, delay waiting for 20-40us, read ZS02 's response signal, after host sending start signal, to switch input mode or output high level, bus is pulled up by pull-up resistor.
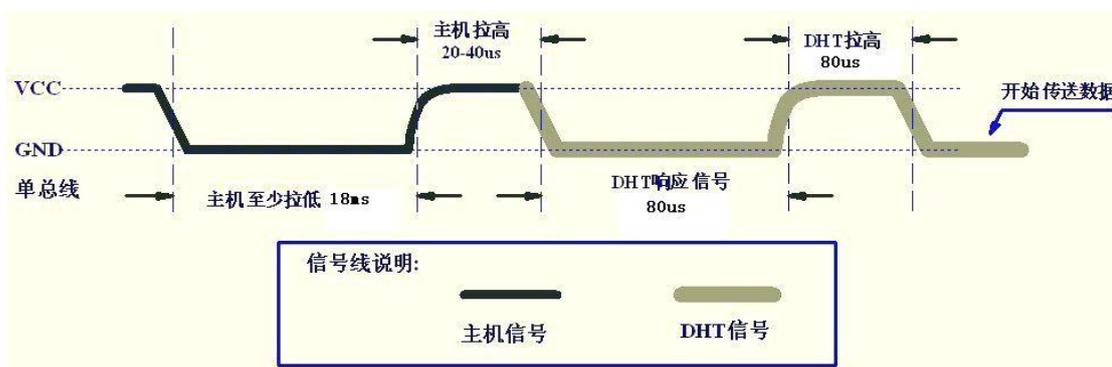

Fig4.

If bus is low level, it indicates the sensor is sending response signal, after ZS02 sending response signal, pull up the bus high level for 80us, ready to send data, every bit data starts at 50us low level, length of high level decide the data bit is either 0 or 1.

If response signal is high level, it indicates the sensor doesn't response, please check the circuit is normal or not. After the last bit data is sent, the sensor pull down the bus for 50us, then the bus is pulled up by pull-up resistor to idle state.
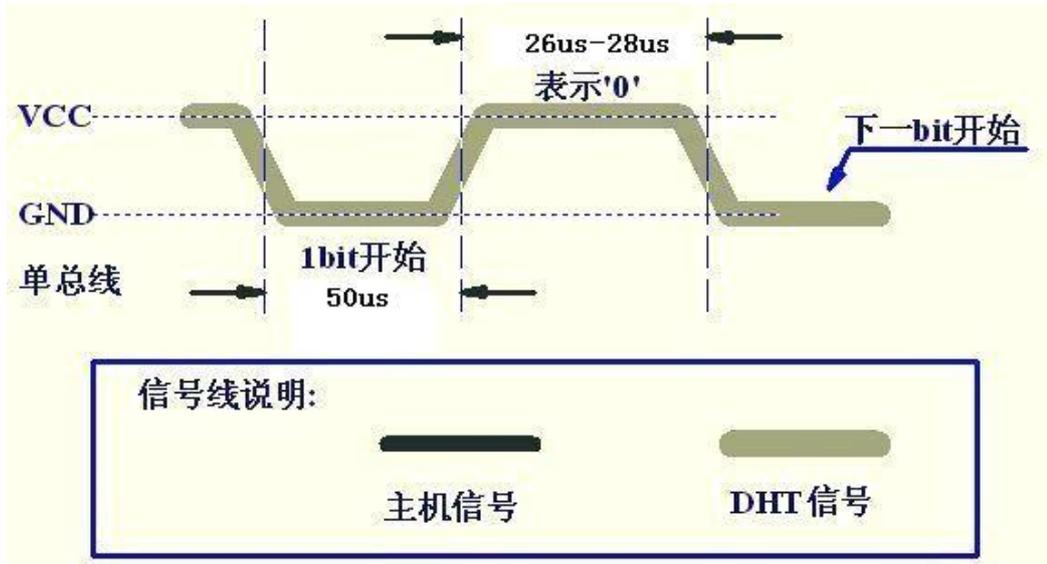
Number 0 signal is showed by Fig5.

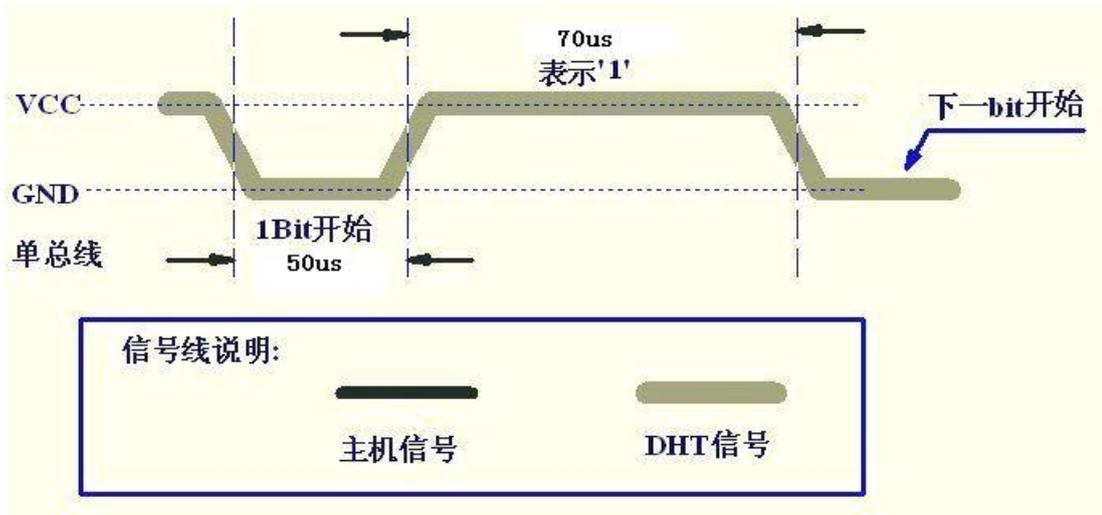Fig5：How to show number 0 signal

Number 1 signal is showed by Fig6.

Fig6：How to show number 1 signal

Caution

Temperature effects the relative humidity. When users detect the humidity, try to ensure the module works at a same temperature. If it is installed with a component which can release heat on a same PCB, please keep distance with the component and ventilate well.

- Don't use it in dusty environment for long time

- Don't touch the humidity component inside

- Forbid storing the module in corrosive environment for long time.

- Recommended storage conditions: temperature 10℃～40℃, humidity is less than 60%RH

- Avoid condensation