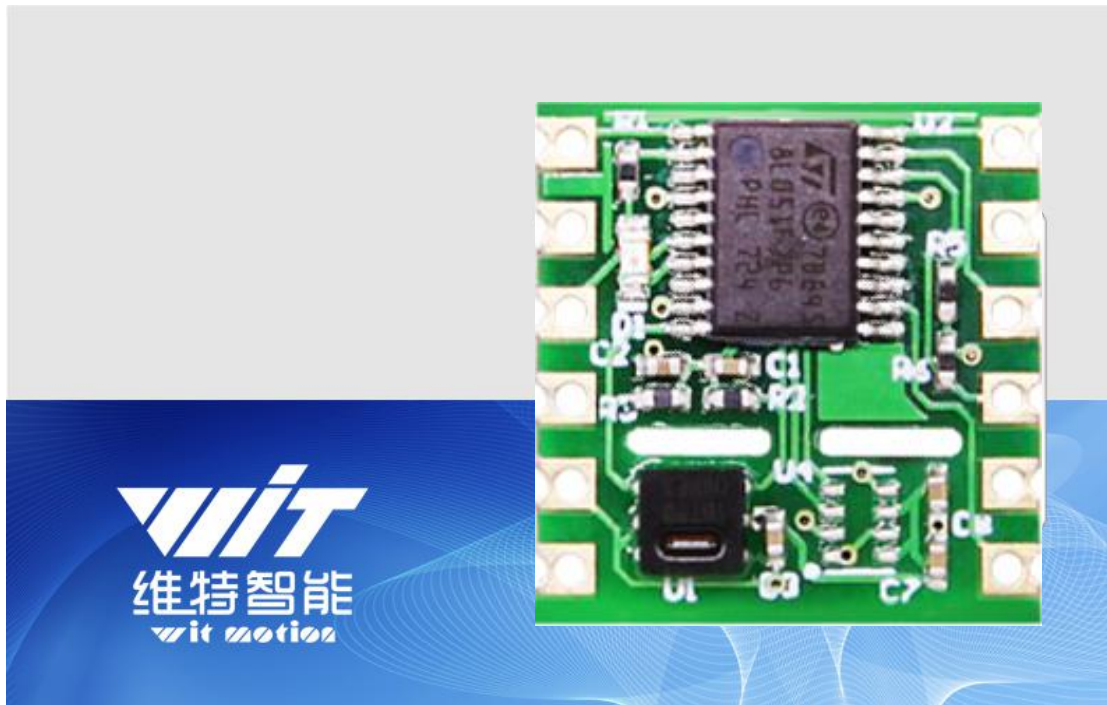


Temperature and humidity sensor

WTSHT20

SPECIFICATION



SPECIFICATION :SPECIFICATION

Model : WTSHT20

Description :temperature and humidity sensor

Production standard

Enterprise quality system standard :ISO9001:2016

Sensor production system:GB/T191SJ 20873-2016

Criterion of detection: GB/T191SJ 20873-2016

Revision date: 2018.8.04

Version	Update content	Author	Date
V1.0	Release	Kelsey	20180804

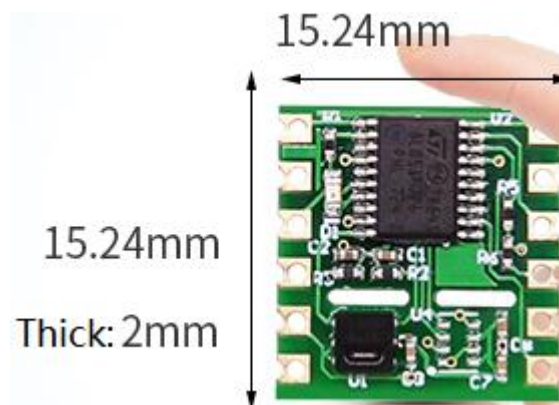
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1、Description

The SHT20 digital temperature and humidity sensor from Switzerland is based on the world-leading CMOSens® digital sensing technology for high reliability and excellent long-term stability. Full range calibration, two-wire digital interface, directly connected to micro controller, greatly reducing development time, simplifying peripheral circuits and reduce cost, in addition, small size, quick in response, low energy consumption, immersible, strong anti-interference ability, integrated temperature and humidity, combined with dew point measurement and cost effective, making the product suitable for a variety of applications

Using the gold plating technology of stamp hole, quality guarantee, can embed in the PCB board of the user.



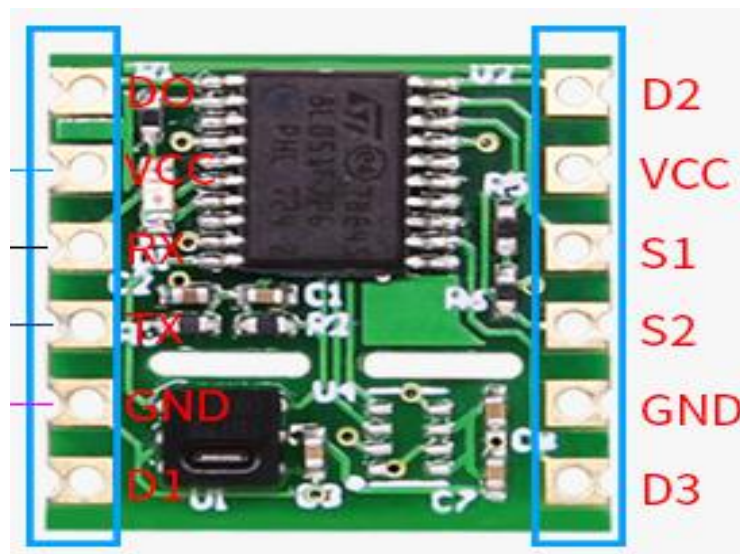
Size	15.24mmX15.24mm X 2mm
Weight	0.8g

2、Features

- 1) Voltage: 2.1~3.3V
- 2) Consumption current: 0.21mA(10HZ 3.3V)
0.08mA(0.1HZ 3.3V)
- 3) Volume: 15.24mm*15.24mm*2mm
- 4) Pad pitch: up and down 100mil(2.54mm), left and right 600mil(15.24mm)

- 5) Data: temperature, humidity
- 6) Baud rate: 115200(default)
- 7) Return rate:10 5 2 1(default) 0.5 0.1HZ optional
- 8) Range:temperature:-40~125℃ humidity:0~100%RH
- 9) Precision: temperature: $\pm 0.3^{\circ}\text{C}$ humidity: $\pm 3\%RH$
- 10) Data interface:UART(TTL)
- 11) Data format:digital output(ASCLL code)

3、 Pin Description



Name	Function
VCC	Power,2.1-3.3V input
RX	Serial data input, TTL
TX	Serial data output, TTL
GND	GND
D0	Temperature upper limit alarm value output
D1	Temperature lower limit alarm value output
D2	Humidity upper limit alarm value output
D3	Humidity lower limit alarm value output

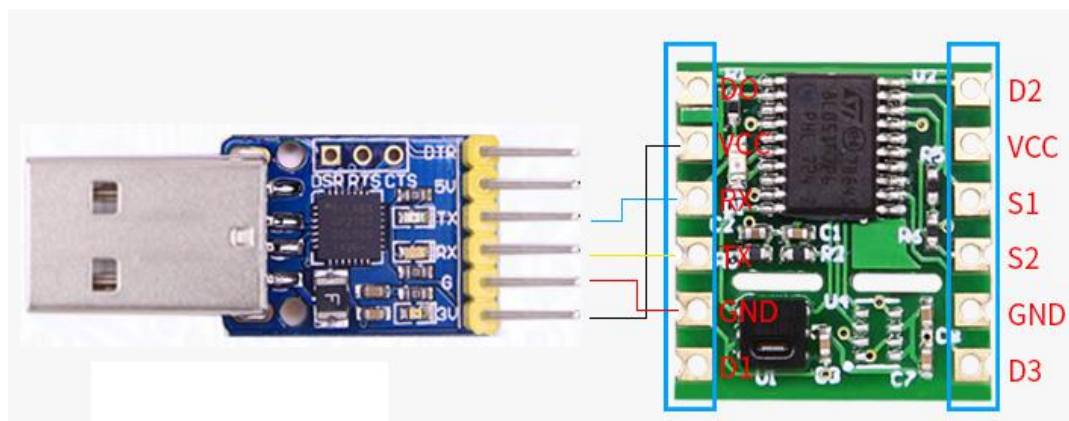
Note: S1 S2 port no function

4、 Hardware connection

4.1 TTL level connection

When connected to the PC software, you need a USB -TTL module. Recommend the following the USB -TTL module:

https://www.aliexpress.com/store/product/Usb-converter-cp2102-usb-ttl-485-232-3-3v-and-5v-output-three-multifunctional-functions/2029054_32873159970.html



The method of connecting the temperature and humidity module with the USB serial module is:

1. Firstly connect the module with the USB - TTL and then connect them to the computer.

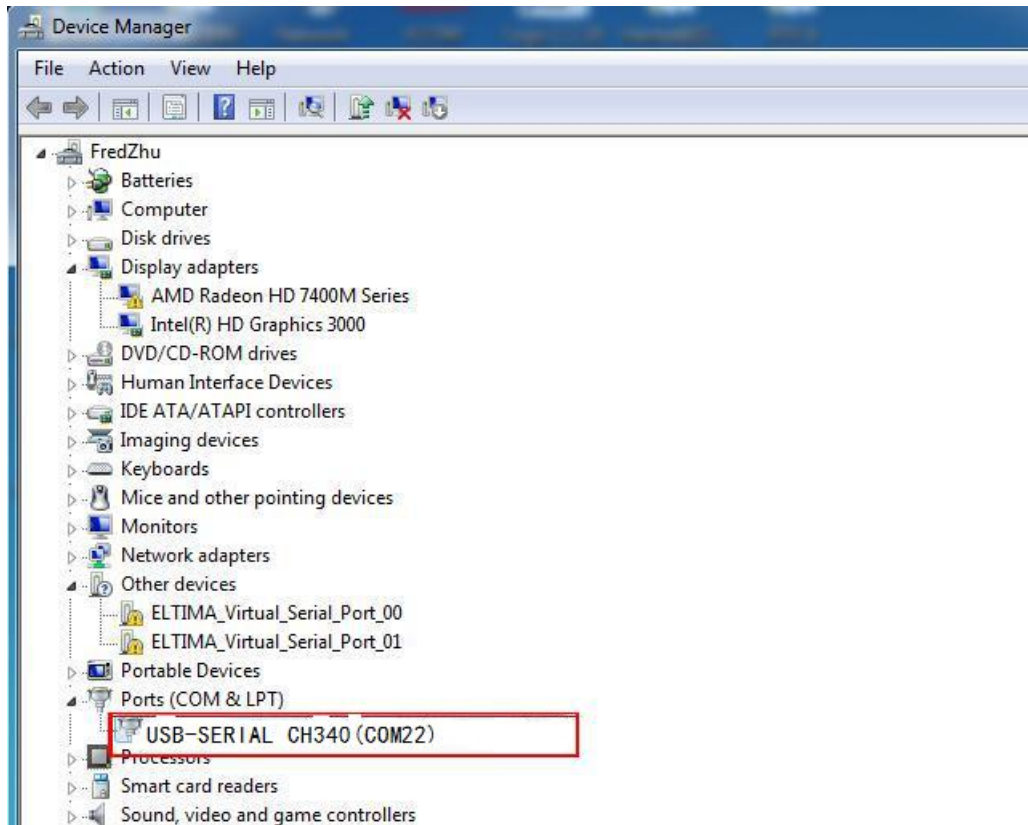
The ways of connecting module with USB -TTL are:

VCC TX RX GND of the module connected to +5/3.3V RX TX GND of the serial module respectively. It is noteworthy that TX and RX need to be crossed, which is TX connected to RX, RX connected to TX.

5、 Software methods

5.1 Methods

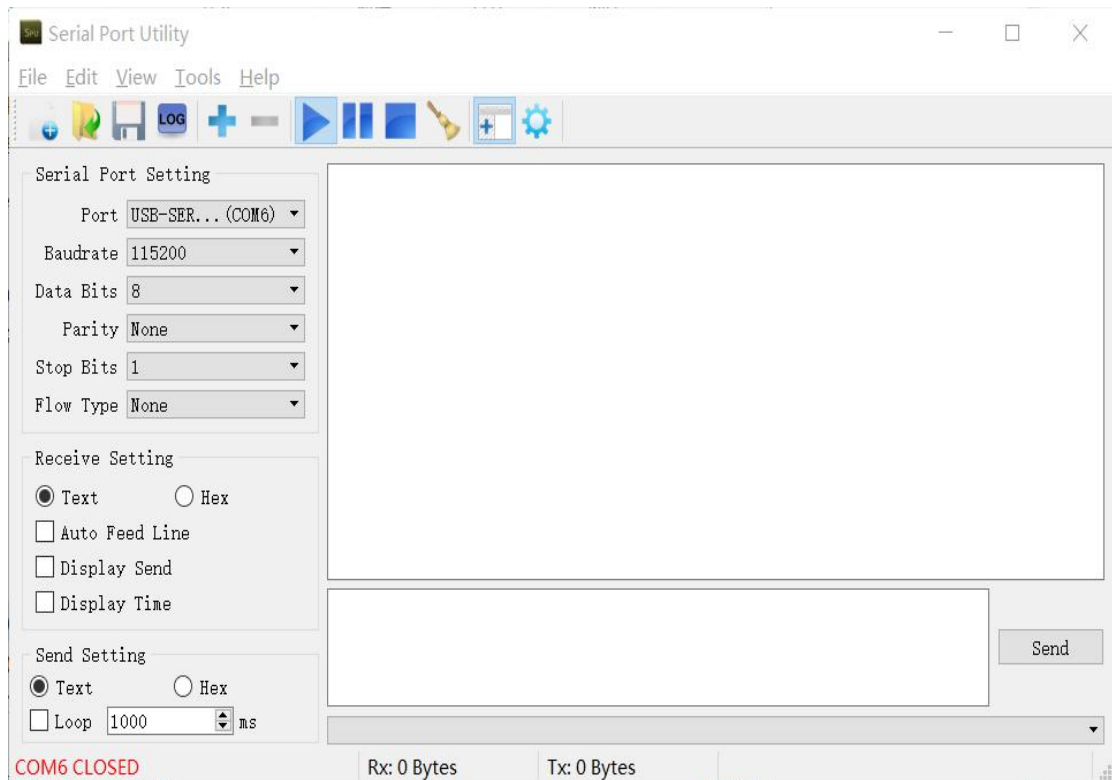
First, the module is connected USB -TTL module to the computer, install the serial module driver. then Device Manager can query corresponding serial number, as show in the figure :



Driver and serial port debugging assistant:

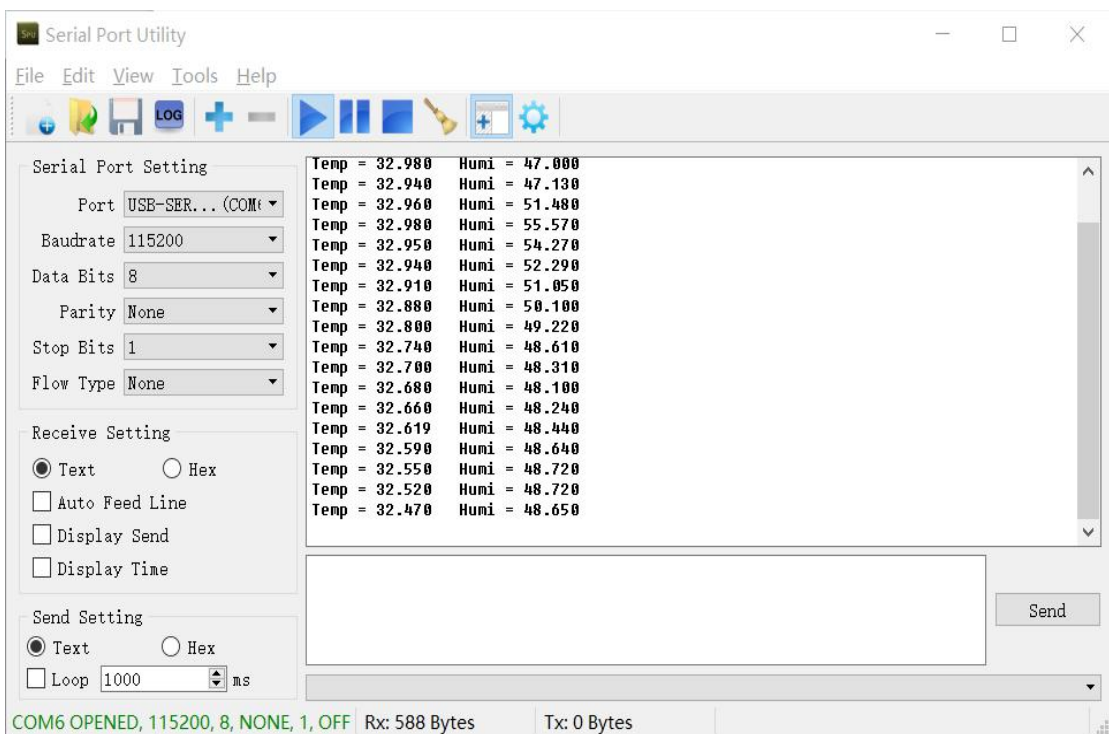
https://wiki.wit-motion.com/english/doku.php?id=communication_module

Open the serial port debugging assistant,select the correct serial port, the serial port number is in the device manager to display,data bit 8 bits, stop bit 1 bit ,check bit 0.



Select the correct serial port to see the data, the module sends the ASCII code, the module automatically sends data when power up.

Temp is temperature data, Humi is humidity data.



6、 Communication Protocol

The following instructions need to be sent twice,the first time is mode from work module into configuration mode,the second send is setting module.

Level: TTL level (non RS232 level, if the module is wrong to the RS232 level may cause damage to the module)

Baud rate: 115200(unchangeable) stop bit 1,check bit 0

6.1 PC software to module

6.1.1 Set return rate

0xFF	0xAA	0x09	RATE	0x00
------	------	------	------	------

RATE: return rate

0x00: 10Hz

0x01: 5Hz

0x02: 2Hz

0x03: 1Hz (default)

0x04: 0.5Hz

0x05: 0.2Hz

0x06: 0.1Hz

6.1.2 Set alarm value

Temperature alarm value upper limit setting:

0xFF	0xAA	0x02	Tmax	00
------	------	------	------	----

Tmax is that the temperature alarm value from decimal to hexadecimal number

Example :set temperature alarm value upper limit is 40°C 0xFF 0xAA 0x02 0x28 0x00

Temperature alarm value lower limit setting:

0xFF	0xAA	0x01	Tmin	00
------	------	------	------	----

Tmin is that the temperature alarm value from decimal to hexadecimal number

Example :set temperature alarm value upper limit is 20°C 0xFF 0xAA 0x01 0x14 0x00

Humidity alarm value upper limit setting:

0xFF	0xAA	0x04	Hmax	XMIN H
------	------	------	------	--------

Hmax is that the humidity alarm value from decimal to hexadecimal number.

Example : set humidity alarm value upper limit 50%RH 0xFF 0xAA 0x04 0x32 0x00

Humidity alarm value lower limit setting:

0xFF	0xAA	0x03	Hmin	XMIN H
------	------	------	------	--------

Hmin is that humidity alarm value from decimal to hexadecimal number.

Example :set humidity alarm value upper limit 30%RH 0xFF 0xAA 0x03 0x1E 0x00

6.1.3 Set hold time (ms)

The hold time is output alarm signal retentive time after the module from alarm state to normal state (default time is 100ms)

0xFF	0xA	0x06	DELAY	DELAY
	A		TL	TH

Example :set hold time is 100ms Unit:ms 0xFF 0xAA 0x06 0x64 0x00

6.1.4 Set temperature and humidity alarm state

Normally open:the port output of the no alarm switch is high level, when exceed the alarm value, the port output is low level.

0xFF	0xAA	0x05	0x01	0xFF
------	------	------	------	------

Normally close: the port output of the no alarm switch is low level,when exceed the alarm value, the port output is high level.

0xFF	0xAA	0x05	0x00	0x00
------	------	------	------	------

7、Application

Agricultural machinery



Internet of things



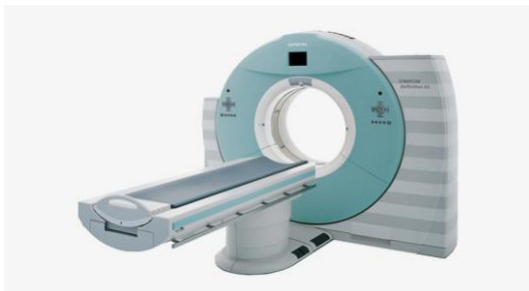
Solar energy



Power monitoring



Medical instruments



Construction machinery



Geological monitoring





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