



## Air temperature and humidity sensor Introduce



**Type NO.: RD-ATHP-R**

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## **1. Product Introduce**

The pen-type temperature, humidity sensor can simultaneously measure ambient temperature, relative humidity and after circuit processing, directly outputs the RS485 through the main control chip.

This product is designed with a pen-like appearance structure, exquisite and compact. The main application places of the product are in the fields of indoor computer room, environmental control and outdoor weather monitoring, with high integration and convenient application. The product can be equipped with an outdoor protective cover for outdoor measurement of ambient temperature, relative humidity.

The product directly outputs the RS485 communication interface, and the user can directly use the wireless DTU module to realize the wireless transmission of data.

## **2. Product Features**

1. Wide voltage design, high cost performance.
2. Digital linearization correction, high precision and high stability.
3. Full range temperature and humidity compensation, wide temperature and humidity measurement range, optional measurement range.
4. Flexible installation and convenient use.
5. Small size, light weight and anti-vibration.
6. It can be made into a variety of shapes to meet different needs of customers.

## **3. Product application**

It is widely used in building automation, telecommunications room, papermaking and printing, warehousing and logistics, shopping malls, hotel housing, agricultural greenhouses, cinemas, railway stations, museums, theaters, clean workshops and other fields where temperature and humidity need to be measured.

## **4. Product Parameter**

- Measure range
  - Temperature: -40 ~ 60°C
  - Humidity : 0 ~ 100%RH (non-condensing state)
- Accuracy:
  - Temperature:±0.3°C(@25°C);
  - Humidity :±3%RH(10% ~ 90%);
- Resolution
  - Temperature: 0.01°C



- Humidity : 0.01%RH
- Power supply voltage: 9V ~ 24V
- Output signal: RS485
- Response time: <1S
- Working environment: temperature: -40°C ~ 60°C; humidity: ≤95%RH
- Working current: DC12V <20ma (485);
- Power consumption: DC12V <0.24W (485);
- Cable length: 3 meters (customizable)
- The farthest lead length: current 200 meters, RS485 100 meters, voltage 50 meters
- Shell material: ABS engineering plastic
- Product weight: <100g
- Protect level: IP65

## 5. Line connection diagram

- Red line: positive power supply
- Black wire: negative power supply
- Yellow wire: RS485 A
- Blue wire: RS485 B

## 6. Data conversion method

### 1. Standard Modbus-RTU protocol

Baud rate: 2400bit/s, 4800bit/s, 9600 bit/s can be set, the factory default is 9600bit/s

Check digit: none;

Data bit: 8; Stop bit: 1

### 2.Communication protocol examples and explanations

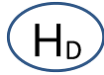
1. Modify the address, for example: change the address of the transmitter with address 00 to 33, host → slave

Original address	Function code	Starting register address	Number of registers	Data length	New address	CRC16 low	CRC16 high
00	10	00 01	00 01	02	00 33	EA	04

If success, the slave will send: 00 10 00 01 00 01 51 D8

2. Read sensor address

Original address	Function code	Starting register address	Number of registers	CRC16 low	CRC16 high
00	03	00 01	00 01	D4	1B



Feedback: 00 03 02 00 FF C5 C4

The sensor address is FF.

3. Read air temperature and humidity and pressure at device address 0x01(The default address is 01)

➤ Inquiry frame

Address code	Function code	Register start address	Number of registers	Low check bit	Check code high
01	03	00 00	00 02	C4	0B

➤ Response frame

Address code	Function code	Data length	Air temperature	Air humidity	Low check bit	Check code high
01	03	04	19 AD	1B E4	66	35

Note: Temperature: 4th and 5th bytes , 19 AD(Hexadecimal )= 6573 ( Decimal) ,  $65.73-40=25.73^{\circ}\text{C}$

Humidity: 6th and 7th byte , 1B E4(Hexadecimal )= 7140 ( Decimal),  $7140/100=71.4\%$

## 7. Instructions

1. When receiving the product, please check whether the packaging is intact and check whether the model and specifications of the transmitter are consistent with the product you purchased;
2. The installation place should be away from the chemical corrosion environment;
3. Transmitters and wires should be kept away from high voltage electricity and heat sources;
4. The transmitter is a precision instrument and should be stored in a dry, ventilated and indoor environment.
5. The sensor is a precision device. Please do not disassemble it by yourself when using it to avoid product damage