Model:UT-5521

(Product Name：High precision temperature and humidity sensors)

Datasheet

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1. Overview

UT-5521 temperature and humidity sensor (referred to as the sensor) is used to measure the environmental temperature and humidity, through the RJ45 interface, using RS485 communication, using MODBUS protocol for data acquisition. The sensor can be used in communication rooms, IT data centers and other indoor places that need temperature and humidity measurement and control.

2. Specification

2.1.1 Appearance
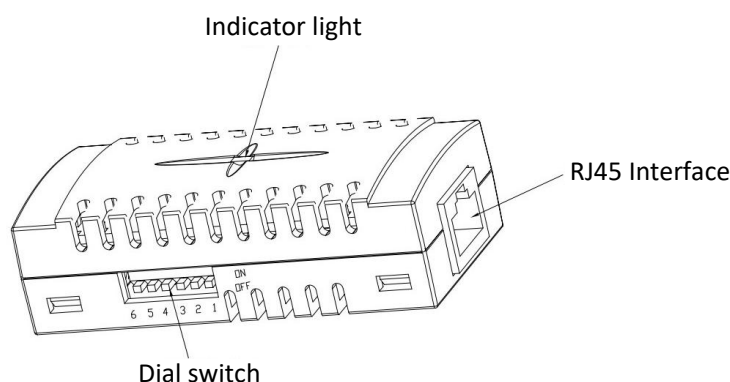
Dimension (L*W*H): 77mm*35.5mm*23mm

Weight: ≈45g

2.1.2 RJ45 interface

The sensor is electrically connected to the outside through an RJ45 interface (see Figure 1 for location), which is used for power supply, communication and equipment cascading of the sensor, and is defined in Table 1

Table 1 RJ45 interface definition

PIN	1	2	3	4	5	6	7	8
Definition	V+	V+	NC	485+	485-	SGND	GND	GND

2.1.3 Dial switch

The pull code switch (location see Figure 1) is used to set the sensor ground rip, so that the sensor through the RS485 bus way to communicate with the upper device RDU rack data unit. The pull code switch can be set to 64 addresses (address 0 to address 63, corresponding to the upper computer software display channel 00 to 3F, please note that in practice, do not use the 00 address, this address is reserved for special purposes) with Hugh set Table 2. by pull code switch setting ground pull, up to 64 sensors can be networked measurement. The pull code switch silkscreen is shown in Figure 2.
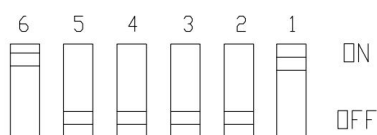
Figure 2 Dial switch

Table 2 draw switch settings and instructions (ON indicates that the corresponding bit is 0, OFF indicates that the corresponding color bit is 1)

SW1	SW2	SW3	SW4	SW5	SW6	Address (HEX),01-3F
OFF	ON	ON	ON	ON	ON	01
ON	OFF	ON	ON	ON	ON	02
OFF	OFF	ON	ON	ON	ON	03
ON	ON	OFF	ON	ON	ON	04
OFF	ON	OFF	ON	ON	ON	05
ON	OFF	OFF	ON	ON	ON	06
/	/	/	/	/	/	/
OFF	OFF	OFF	OFF	OFF	OFF	3F

2.1.4 Indicator lights

Indicator lights (see Figure 1 for location) are described in Table 3.

Table 3 Indicator light

Color	Description
Green	Flashing in transmitting status
Yellow	Flashing in the receiving status

2.1.5 Technical specification

Table 4 Technical specification

Item	Indicator
Power consumption	5Vdc~30Vdc
Measurement temperature range	-20~80°C
Measurement temperature accuracy	±1°C
Measurement humidity range	0~100%RH
Measurement humidity accuracy	±5%RH
Baud rate	9600bps
Protocol	MODBUS

2.1.6 Environmental indicator

Table 5 Environmental indicator

Item	Indicator
Operating temperature	-20 ~ 80°C
Storage temperature	-20 ~ 80°C
Humidity	0 ~ 100%RH (no condensing)

3. Protocol and instruction description

● Send: 01+03+0000+0004+4409 (This command reads temperature and humidity)

● Return: 01+03+08+00+02+07+07+04+07+08+03+F550

Indicates that the temperature read is 27.7°C   and the humidity is 47.83%RH

***Note**: When the need to extend to test the negative temperature, the temperature is expressed as 01(00)+02+05+07, that is, the temperature expression is only three valid numbers, at this time 01 means negative temperature, 00 means positive temperature; humidity expression remains unchanged, and other algorithms remain unchanged;

4. Installation

4.1 Precautions

No conductive dust, corrosive and insulation-destroying gases are present.

Avoid using in places with water and fog.

Leave more than 20mm space around the ventilation hole of the sensor to ensure the air circulation inside and outside the sensor.

To ensure the accuracy of data measurement, please read the measurement data after about 1 minute of power on.

4.2 Mechanical mounting

The sensor can be mounted inside the cabinet or on the wall. Before installation, determine the installation position according to Table 5 and the requirements of 4.1 Precautions. The specific installation method is as follows.

Installation inside the cabinet

Screw the supplied M5 screws to the screw holes in the cabinet column.

Hang the sensor through the mounting hole (position wind Figure 3) to the screw to complete the installation.
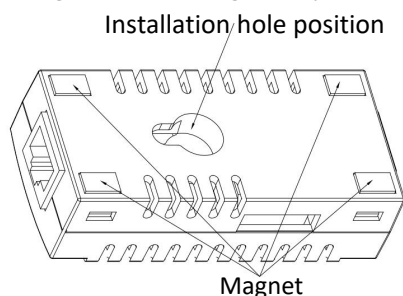

Figure 3 Mounting position (back view)

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● Mounting on the wall

Use a 5.0mm diameter impact drill to make a good positioning hole in the wall, drill a plastic expansion tube (self-provided) into the positioning hole and screw a self-tapping screw (self-provided) into the plastic expansion tube.

Through the mounting holes (location wind Figure 3) the sensor will be hung on the screws to complete the installation.

● Mounting on ferrous material

Attach directly to the ferrous material by means of the magnetic material at the bottom.

4.3 Wiring

Connect the RJ45 connector of the sensor with a standard straight-through network cable to the RJ45 connector of the temperature sensor connector of the upper-level device or the RJ45 connector of the cascade sensor.

Appendix Toxic and hazardous substances or elements identification table

Part Name	Toxic and harmful substances or elements					
	Lead	Mercury	Cadmium	Hexavalent chromium	Polybrominated biphenyl	Polybrominated diphenyl ether
	PB	Hg	Cd	Cr	PPB	PBDE
Made into board	O	O	O	O	O	O
O: indicates that the content of toxic and hazardous substances in all homogeneous materials of the component is below the limit requirement specified in SF/T-11363-2006. X: indicates that the content of toxic and hazardous substances in at least one homogeneous material of the part exceeds the limit requirement of SF/T-11363-2006						
Utek technology has been committed to the design and manufacture of environmentally friendly products, we will continue to reduce and eliminate toxic and hazardous substances in our products through continuous research. The following components or applications contain toxic and hazardous substances is limited to the current level of technology can not achieve a reliable replacement for those who do not have a mature solution to the case						
Explanation on the environmental protection use period: The environmental protection use period of this product (which has been marked on the product body) refers to the period in which the toxic and hazardous substances or elements contained in the product from the date of production will not cause serious impact on the environment, persons and property under normal conditions of use and compliance with the safety precautions of the product.						
Scope of application: UT-5521 temperature and humidity sensor						