SPD-HT485-RJ
Temperature & Humidity Transmitter

1. Production introduction

SPD-HT485-RJ is an industrial grade temperature and humidity transmitter used for measuring indoor temperature and humidity, with the advances of intuitive display, high precision, low power consumption and easy installation. It has two groups RJ45 ports, easy cabling for power supply and communication. With RS485 interface and standard Modbus protocol, it's easy to be integrated to other remote monitoring system.


2. Specification

Model No.	SPD-HT485-RJ	
Power Supply	DC 12V	
Power consumption	<120mW	
Measurement Range	Temperature	-20℃ ~ 70℃
	Humidity	0 ~ 100%RH
Measurement Accuracy	Temperature	±0.5℃ at 25℃
	Humidity	±3%RH at 25℃
Temperature and humidity correction range	Temperature	±2℃
	Humidity	±5%RH
Working environment	Temperature	-20℃ ~ 70℃
	Humidity	0 ~ 100%RH　(no condensing)
RS485 Communication	Protocol	MODBUS-RTU protocol
	Baud rate	Default 9600; optional 2400, 4800, 9600, 19200bit/s
	Address	1~254, default 1
	Data format	N,8,1;

| Display	LCD display
Dimension (L*W*H)	80*80*25mm
Suggest monitoring area	10-20 ㎡

3. Installation

Installation methods: hole installation and wall hanging installation.
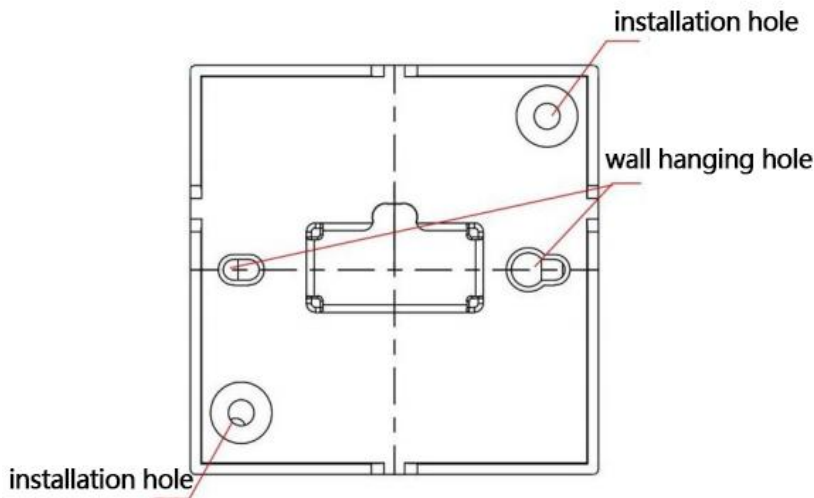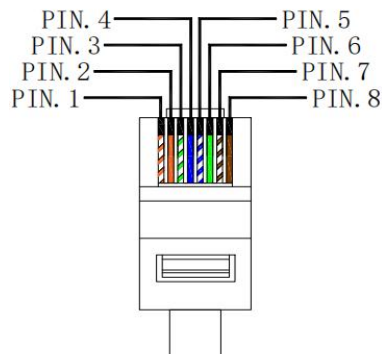

Suggestion: The horizontal distance from the device to the aircon air outlet should be greater than 1.5m, and the distance from the sensor to the ceiling air outlet should be greater than 0.5m.

4. Wiring

There are 2 groups RJ45 ports, only one group will be used for power supply and communication, the other one is used to cascade other RS485 sensors.
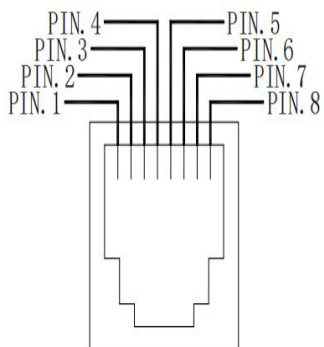
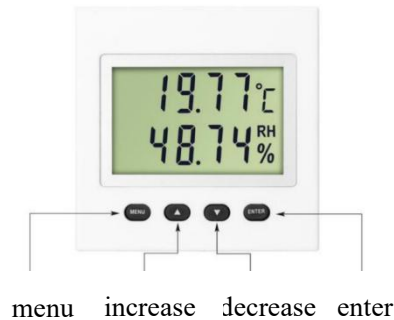(PIN of device RJ45 port)   (PIN of RJ45 connector)

PIN	PIN 1 & 2	PIN 3	PIN 4 & 5	PIN 6	PIN 7	PIN 8
Definition	Power +	NC	Power -	NC	RS485+	RS485-

Note: Don't power it till all devices connection finished

5. Setting

5.1 RS485 address setting

menu   increase   decrease   enter

a. Press "MENU" for 3 seconds then RS485 address will be showed on the LCD display, default address 1.

b. Press ▲ or ▼ to set address.

c. Press "ENTER" for 3 seconds to back to home page, address setting successfully.

5.2 Baud rate setting

a. Long press "MENU" for 3 seconds to enter the setting interface, short press "MENU" then baud rate will be showed on the LCD display. Default 9600, optional 2400, 4800, 9600, 19200bit/s.

b. Press ▲ or ▼ to set baud rate.

c. Press "ENTER" for 3 seconds to back to home page, power off and power on, then baud rate setting successfully.

Note：It will exit the setting interface if staying in the setting interface for 10 seconds without any action.

6. Dimension

Unit: mm (tolerance±0.5mm)
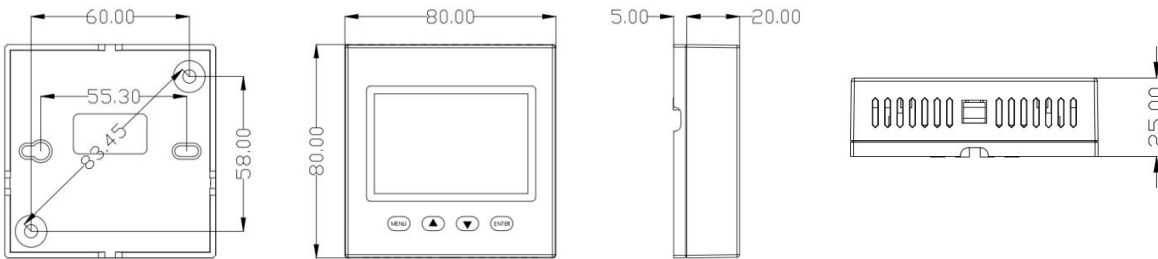
7. Safety Precautions

The controller is an electronic device, and the following precautions should be strictly applied when using it to avoid electronic components damage and safety accidents such as electric shock, casualties, fire and explosion:

● Do not touch the sensor with wet hands.

● Do not modify or disassemble the sensor.

● Do not connect the power supply to the communication terminal by mistake, otherwise the components will be damaged.

● Avoid using organic solvents during regular inspection and maintenance, and wipe with dry cotton gauze.

● Please use the equipment under the rated voltage and rated current. It is recommended to add protective measures such as isolator or fuses to the external lines to avoid short-circuiting, burning out of the equipment under abnormal conditions, and safety accidents.

8. Installation Precautions

● Be ware of falling, otherwise the LCD screen may be easily broken.

● Do not use in places with water or fog.

● Do not install in dusty and dirty environments.

● Do not install it where strong electromagnetic induction occurs.

● Before installing the equipment, please confirm the rated voltage of the controller and the power supply voltage.

● Do not install the sensor in environments with conductive dust, corroded metals, and insulating gases.

9. MODBUS Communication Protocol

Standard serial 485 communication interface is adopted, and the information transmission method is Universal Asynchronous Receiver/Transmitter (UART).

Start bit 1 bit, data bit 8 bit, stop bit 1 bit, no parity bit.

The default address is 1, and default baud rate is 9600bps.

MODBUS RTU communication protocol is adopted, and the protocol format is as follows:

Read data command format:

Address	Function	Register start address	Register count	CRC 16 bits parity
1Byte	1Byte	2Byte	2Byte	2Byte
0X01-0Xff	0X03			

Return

Address	Function	Data length	Data 1	Data 2	......	CRC 16 bits parity
1Byte	1Byte	1Byte	2Byte	2Byte		2Byte
0X01-0Xff	0X03					

Write data command format

Address	Function	Register address	Write register value	CRC 16 bits parity
1Byte	1Byte	2Byte	2Byte	2Byte
0X01-0Xff	0X06			

Return

Address	Function	Data length	Current register value	CRC 16 bits parity
1Byte	1Byte	1Byte	2Byte	2Byte
0X01-0Xff	0X06		Low byte valid	

Write register description

Register address	Description	Byte	Range
0X07d0	Address setting register	2byte	0X01-0Xff

0X0bb8	Baud rate setting register	2byte	0X01-0X04

Baud rate setting value

2400	0X01
4800	0X02
9600	0X03
19200	0X04

Registers table

Register address	Function	Description	Permission	Range	Unit
0x0000	0x03	temperature	Read Only		0.01°C
0x0001	0x03	humidity	Read Only		0.01%
0X07d0	0x03/0x06	Address setting register	Read/Write	0X01-0Xff	
0X0bb8	0x03/0x06	Baud rate setting register	Read/Write	0X01-0X04	

Command example

Suppose the address of the temperature and humidity sensor is 01,

Read register data 01 03 00 00 00 02 C4 0B,

The returned data is 01 03 04 0B8F 1B85 02 AF,

0B8F represents the temperature, which is converted into a decimal number of 2959. Divide by 100 to get the actual temperature value of 29.59℃. Same as it, the humidity value of 70.45% can also be obtained.

Baud rate setting: 01 06 0b b8 00 03 4b ca

Where 0003 is the set baud rate value, the baud rate is 9600

The address setting is the same as the baud rate setting.