

## SPD-HT485-A

### Temperature & Humidity Transmitter

#### 1. Production introduction

SPD-HT485-A 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.

With RS485 interface and standard Modbus protocol, it's easy to be integrated to other remote monitoring system.



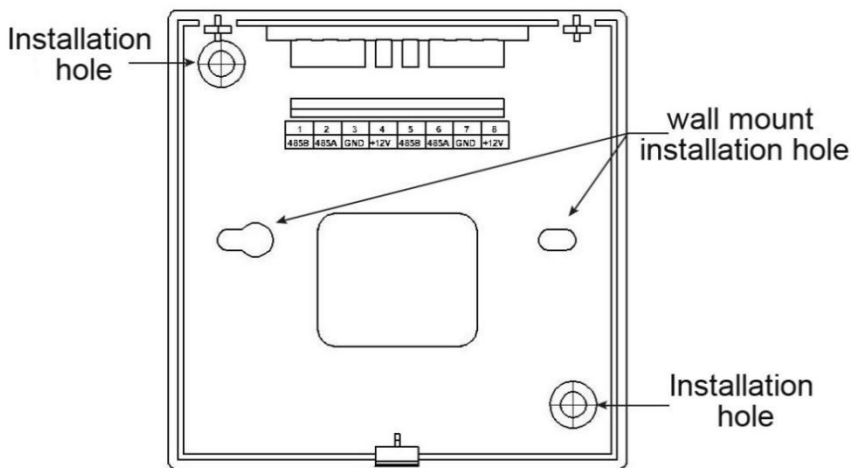
#### 2. Specification

Model No.	SPD-HT485-A	
Power Supply	12V DC	
Measurement Range	Temperature	-20°C ~ 70°C
	Humidity	0 ~ 100%RH
Measurement Accuracy	Temperature	±0.5°C at 25°C
	Humidity	±3%RH at 25°C
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)	86*86*30mm
Suggest Monitoring Area	10-20 m <sup>2</sup>

### 3. Installation

Two installation methods: wall-mounted vertical installation and ceiling horizontal installation.



*Note: The horizontal distance of the device to the air supply outlet of the air conditioner should be greater than 1.5m, and the distance to the ceiling air supply outlet should be greater than 0.5m.*

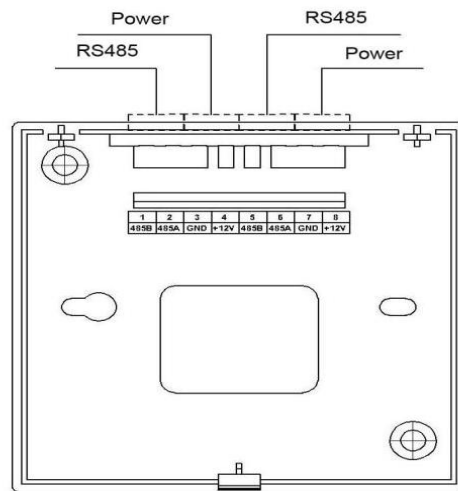
### 4. Wiring

There are two groups terminals, only need one group to support the product's power supply and communication, the other group terminal for cascading other RS485 devices.

\*485A is positive, 485B is negative\*

\*+12V connect to power positive, GND connect to power negative\*

1	2	3	4	5	6	7	8
485B	485A	GND	+12V	485B	485A	GND	+12V



#### 4.1 Power connect

- 9~32V DC wide voltage input, suggest to connect 12V DC in order to assure long term working stability.
- Please connect the power cord according to the terminal identification. “+12V” connect to power positive, “GND” connect to power negative.
- Do not connect the power cord to the communication terminal by mistake; otherwise it will cause damage to the components.

*Remark: please be safe when connect to power, make sure electronic is cut-off before operation.*

#### 4.2 RS485 communication cable connect

Please connect the power cord according to the terminal identification. “485+” is positive, “485-” is negative. The wrong connection between positive and negative terminals will result in failure to communicate

## 5. Setting

#### 5.1 RS485 address setting

- Press “MENU” for 3 seconds then RS485 address will be showed on the LCD display, default address 1.
- Press ▲ or ▼ to set address.
- Press “ENTER” for 3 seconds to back to home page, address setting successfully.



## 5.2 Baud rate setting

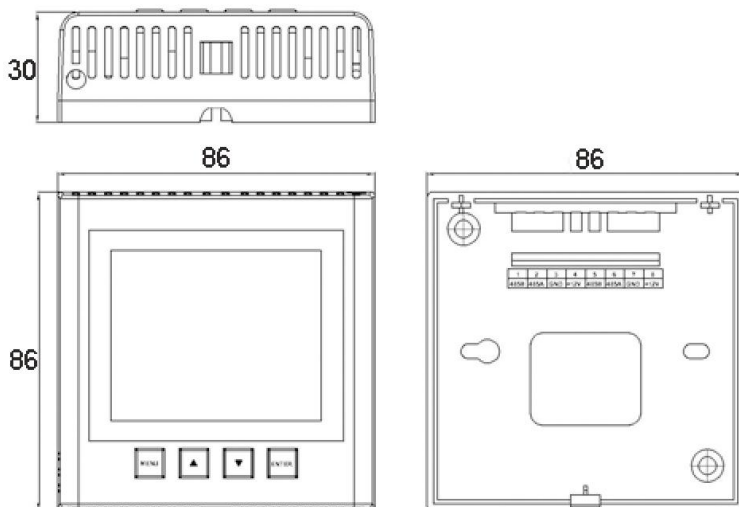
- a. Long press “MENU” for 3 seconds to enter the setting interface, short press “MENU” then baud rate will be showed on the LCD display. Default 9600, optional 2400, 4800, 9600, 19200bit/s.
- b. Press ▲ or ▼ to set baud rate.
- c. Press “ENTER” for 3 seconds to back to home page, address setting successfully.



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

## 6. Dimension

Unit: mm



## 7. 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
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**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°C. 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.