# AHT-503 Temperature & Humidity Transmitter (Wireless/RS485 output) Manual

Thanks for choosing our product! Please read carefully and follow this instruction before using!

Installations

1. Please check if the transmitter, accessory pack and instruction manual are included in the package.
2. Please decide right position for installation.
3. (Duct-mount) Please insert the sensing probe into the duct.
   ① Remove the upper cover from transmitter with screwdriver.
   ② Please pass power cable and signal cable through the cable entry.
   (refer to Figure 1). And please refer Figure 2 for wiring.
4. (Outside air type and separate type) Please refer Figure 1 to fasten the base of transmitter with screws on the wall.
   ①Remove the upper cover from transmitter with screwdriver.
   ②Please refer Figure 2 for wiring
5. Please apply 22AWG shielded twisted pair cable.

Figure 1

Fastening screws   Cable entry
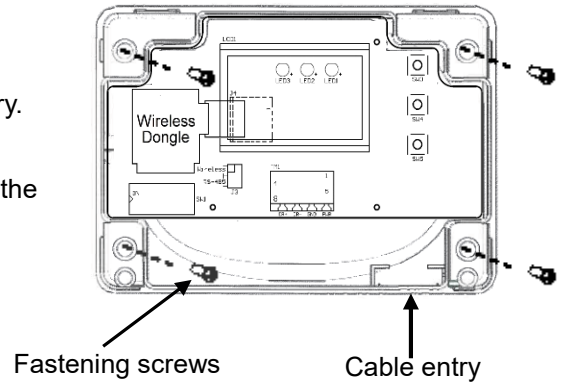
Notice: Please remove power from the unit before wiring, in order to avoid any damage or hazard.

Notice

Please do not install the transmitter in the area as below.
- Dead air spots behind doors or in corners
- Hot or cold air from ducts
- Concealed pipes and chimneys
- Radiant heat from sun or appliances or cooled areas such as an outside wall behind the transmitter.
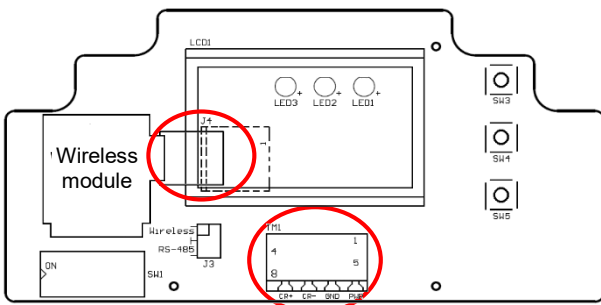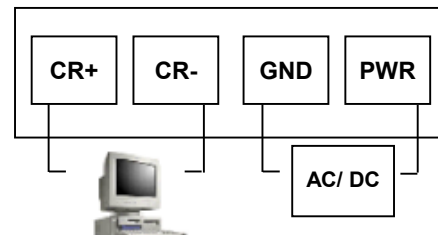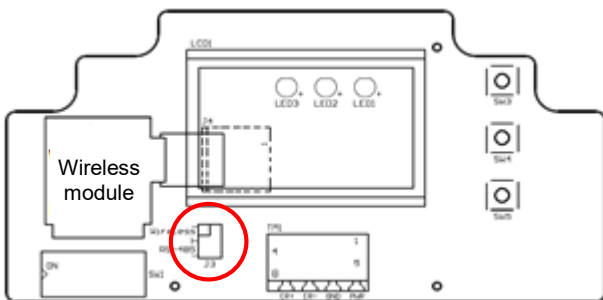
Wiring

Figure 2

1	PWR	DC 12 ~ 36V AC 24V (50/60Hz)
2	GND	System GND
3	CR-	RS485 (＋)
4	CR+	RS485 (－)
5	J4	Wireless module

CR+	CR-	GND	PWR

AC/ DC

Transmission Mode setting

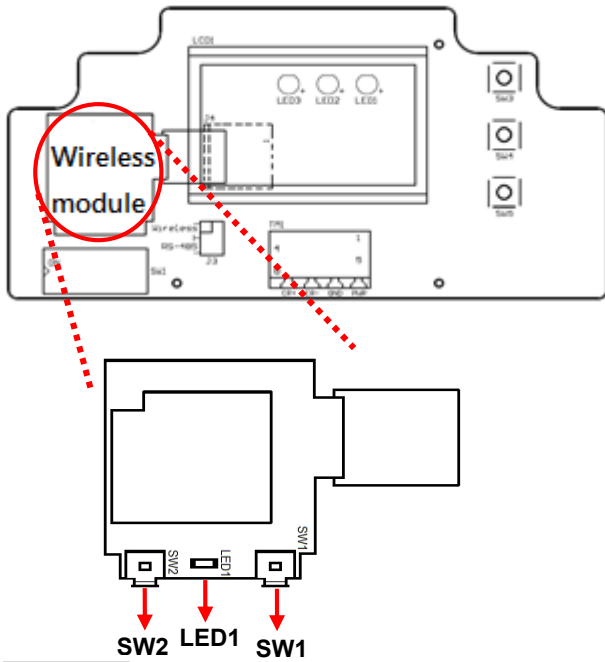### Jumper setting

Transmission Mode setting (RS485/Wireless)

Transmission Mode	J3
RS485	
Wireless **(Default)**	

Join a wireless network

If the transmission mode is set as "Wireless", please follow the steps as below to establish the conneciton between transmitter and receiver.

SW2 **LED1** **SW1**

1. Please make sure the wireless receiver has been connected with PLC or with computer. (Please refer the manual of wireless receiver for the detail operation.)

2. Please press and hold the SW2 on wireless module until the LED1 (Green) is ON. And it will activate the pairing procedure and complete the connection within 60 secs.

3. When the LED1 switches off, the connection between the transmitter and receiver has been done. If the LED1 blinks every 5 secs, the connection fails. Then please press SW1 (Reset) and repeat the above-mentioned steps.
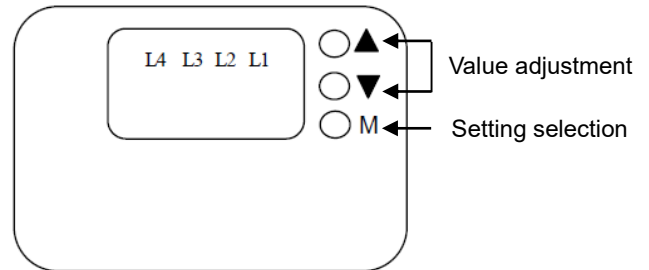
Operation

1. Adjustment with Ⓜ ▲▼

Start setting menu

a. Press Ⓜ for about 3 sec and LCD/LED starts blinking.

b. Press Ⓜ for setting selection and use ▲▼ for value adjustment.

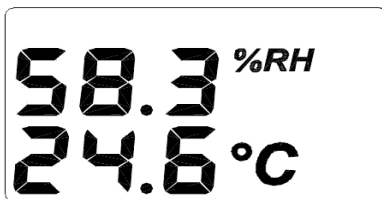Value adjustment — (▲▼)
Setting selection — M

** If LCD/LED blinks 30 times without any setting selection, it will return to regular display.
** It will also return to regular display after 25~30 sec if no action occurred.
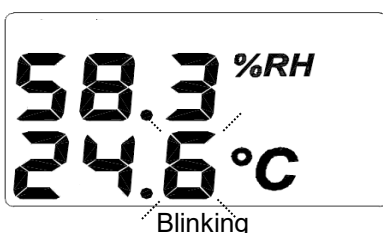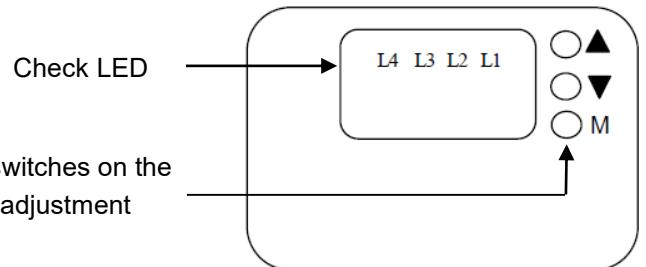
2. Settings:

| The model with LCD display	The model without LCD display
Regular display	
58.3 %RH 24.6 °C	Check LED → (L4 L3 L2 L1) Press the switches on the panel for adjustment
Setting 1 :	**Setting 1 :**
Temperature adjustment (adjustment unit: 0.1℃)	Temperature adjustment (adjustment unit: 0.1℃
Ⓞ Press Ⓜ one time to switch to setting 1. Use ▲(+) and ▼(−) for value adjustment	① Press Ⓜ one time to switch to setting 1. Use ▲(+) and ▼(−) for value adjustment
58.3 %RH 24.6 °C Blinking	② L1 turns on.

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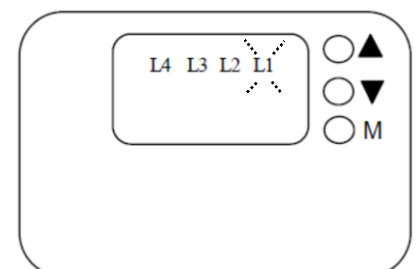
Setting 2:

Humidity adjustment (adjustment unit: 0.1%RH)

① Press Ⓜ two times to switch to setting 2.
   Use ▲(＋) and ▼(−) for value adjustment
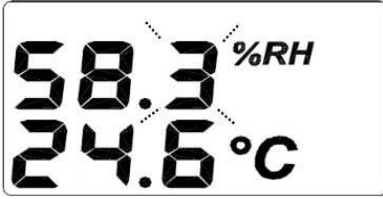
```
58.3 %RH
24.6 °C
```
Blinking

Setting 3:

Press Ⓜ three times to switch to "Reset" mode, switch "YES"(all value resets to zero) or "NO"(all value remains) with ▲ or ▼

```
RES
NO
```
Blinking

```
RES
YES
```
Blinking

Back to the regular display :

Press four times Ⓜ to go back to regular display

Setting 2 :

Humidity adjustment (adjustment unit: 0.1%RH

① Press Ⓜ two times to switch to setting 2.
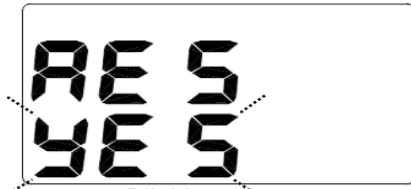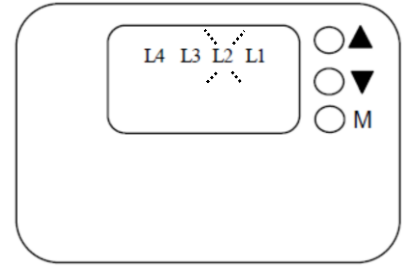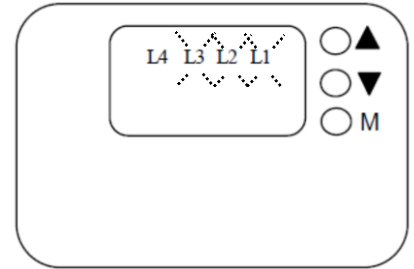   Use ▲(＋) and ▼(−) for value adjustment

② L2 turns on.

```
L4  L3  L2  L1    ○▲
                  ○▼
                  ○M
```

Setting 3:

① Press Ⓜ three times to switch to "Reset" mode, switch "YES" (all value resets to zero) or "NO" (all value remains) with ▲ or ▼

② L1, L2, L3 all turn on

```
L4  L3  L2  L1    ○▲
                  ○▼
                  ○M
```

Back to the regular display :

Press four times Ⓜ to go back to regular display

RS485 settings

1. Device ID：Setup device ID with dip switch
   ON ↑ ▮ : 1 , OFF ↓ ▯ : 0
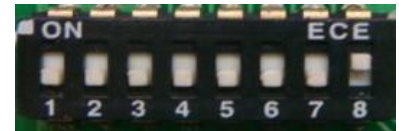
Figure 3

	Device ID (ON is 1, OFF is 0)				
1	0000 0001		127	0111 1111	
2	0000 0010		128	1000 0000	
. . .		. . .	. . .		. . .
64	0100 0000		246	1111 0110	
65	0100 0001		247	1111 0111	

2. Protocol :
   Baud Rate = 9600 (Default); Word Length = 8; Parity = none; Stop Bits = 1

Data Reading Type

	Device ID	Function	Address(H)	Address(L)	Data Length (H)	Data Length (L)	Checksum
Temperature	By setting	0x03	0x00	0x00	0x00	0x01	XXXX
Humidity	By setting	0x03	0x00	0x01	0x00	0x01	XXXX
Temperature & Humidity	By setting	0x03	0x00	0x00	0x00	0x02	XXXX

Responding Data Type

	Device ID	Function	Data byte	Temperature		Humidity		Checksum
				Data (H)	Data (L)	Data (H)	Data (L)	
Temperature	By setting	0x03	0x02	0x09	0x34			XXXX
Humidity	By setting	0x03	0x02			0x13	0x0B	XXXX
Temperature & Humidity	By setting	0x03	0x04	0x09	0x34	0x13	0x0B	XXXX

** **Remark 1**：XXXX is the checksum for CRC16

** **Remark 2**：The unit of temperature data obtained is ℃; the unit of humidity is %RH. The data obtained is hexadecimal. To get temperature and humidity value, convert hexadecimal to decimal and divided it by 100.

Example :
   Convert 0x0934(hexadecimal) to decimal➔ 2356 (decimal)and divide 2536 by 100➔23.56℃
   Convert 0x130B (hexadecimal) to decimal➔ 4875 (decimal)and divide 4875 by 100➔48.75%RH

Calibration

To calibrate 23.56 to 20.56, the correction is as below:
(20.56-23.56)*100 = -300 and convert the calibration value to 0xFED04 (hexadecimal).

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Temperature	By setting	0x06	0x00	0x02	0xFE	0xD4	XXXX

To calibrate 23.56 to 26.56℃, the correction is as below:
(26.56-23.56)*100=300 and convert the calibration value to 0x012C (hexadecimal).

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Temperature	By setting	0x06	0x00	0x02	0x01	0x2C	XXXX

To reset to default value, set 0x0000.

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Temperature	By setting	0x06	0x00	0x02	0x00	0x00	XXXX

To calibrate 48.75%RH to 45.75%RH, the correction is as below:
(45.75-48.75)*100= -300 and convert the calibration value to 0xFED04 (hexadecimal).

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Humidity	By setting	0x06	0x00	0x03	0xFE	0xD4	XXXX

To calibrate 48.75%RH to 51.75%RH, the correction is as below:
(51.75-48.75)*100=300 and convert the calibration value to 0x012C (hexadecimal).

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Humidity	By setting	0x06	0x00	0x03	0x01	0x2C	XXXX

To reset to default value, set 0x0000.

	Device ID	Function	Address(H)	Address(L)	Data (H)	Data (L)	Checksum
Humidity	By setting	0x06	0x00	0x03	0x00	0x00	XXXX

** **Remark 3**：The calibration range of Temperature(℃) and Humidity(%RH) is ±1000.

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