UTH175 INDUSTRIAL TEMPERATURE HUMDITY SENSOR

USER MANUAL

1. Features：

◆ Good performance, high accuracy, suitable for all conditions of temperature humidity measurement.

◆ Standard design, good outlook and scientific structure, wall mounted

◆ LCD indicator and RS485 output.

Application: used for temperature and humidity monitoring and measurement in industrial field measurement, hvac, building, production workshop, warehouse etc.

2. Specifications:

Power supply: 24VAC, 24VDC, 12VAC, 12VDC (please select one when ordering)

Output signal: RS485 (MODBUS-RTU)

Display: LED

Temperature range: -40~80℃

Humidity range: 0~100%RH

Accuracy: ≤± 0.5℃@25℃,

   ±3%RH (30~80%RH@ 25℃)

Working temperature range: -20~+60℃
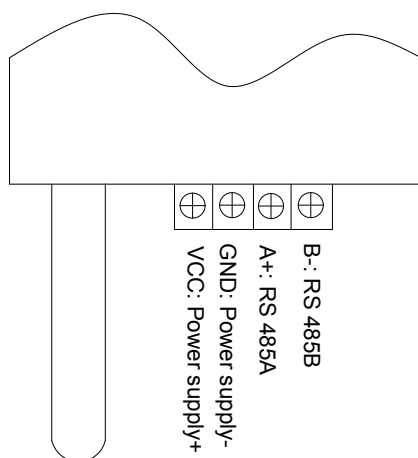Working current: ≤ 100mA
Installation method: wall mounted

3. Dimensions:
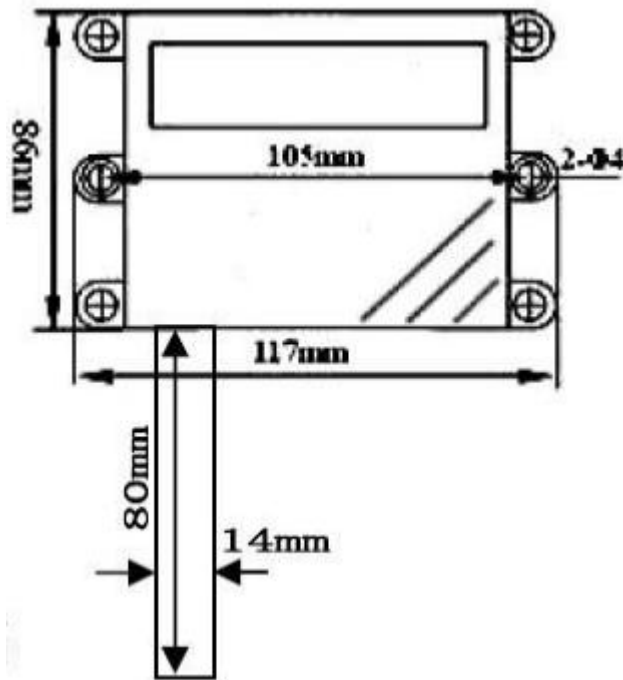
4. Wiring details

(1) the wiring details for the sensor only with communication interface or only have transmitter output signal:
like below terminals picture:

5. The wiring details of main line for bit qty sensors

(1) The cable should be Chinese standard RVVSP4x0.5, or RVVP4x0.5.
(2) Please do not give power supply when do wire connection. The distance between sensor and main line should within 30cm, the sensor line road must not be same line pipe as 220V or 380V line, otherwise, the sensor communication interface will be breakthrough easily or lighting stroke.
(3) The main line should be hand in hand topology structure, please do not use star topology structure.

6. Key Operation

6.1 Power on self-test
(1) connect the terminals according to the wiring connection
(2) check the wiring carefully and make sure all wirings are connected correctly, then power on.
(3) after the power is on, the sensor will display the sensor brand and model, and then display the self-test results. If the words "PASS" is displayed on the right side, this mean the self-test passes. The sensor adopts man-machine dialogue to input parameters, using different PROMPT symbols to prompt the input data. On the normal condition, the left side will display the humidity measured value, and the right side will display the temperature measured value.

6.2 Key operation explanation

SET: parameter setting key. On setting status, to store the new set of parameter and enter into next parameter setting
▲ Value increase key. On setting status, to increase the value
▼ Value decrease key. On setting status, to decrease the value.

6.3 Parameter setting
(1) On setting status, the left side display prompt symbol, the right side display setting value （please refer to table 1 on last page for the details of prompt symbols and corresponding function.）
(2) if there is no any operation in 20 second during setting status, the sensor will return to work automatically.
(3) Press set key, the left side display Cd, and the bottom display 1234, use ▲ or ▼ to modify the value to 1234, or 1236, or 1238, and press set key again, will enter the setting status. It is invalid if input other number.

Example one: how to check the sensor's address and baud rate
Press SET key, and display on screen is "cd   1230", press ▲ at 4 times, the screen displays "cd   1234", and then press SET key. The screen display "AdR 1", this means the address is 1. now press SET key again, the screen displays "baud

9600", this means the baud rate is 9600.

Example two: how to change the sensor address from 1 to 3.
Press SET key, and display on screen is "cd   1230", press ▲ at 4 times, the screen displays "cd   1234", and then press SET key. The screen display "AdR 1", this means the address is 1. now press ▲ at 2 times, the screen displays "AdR 3", and press SET key again, the setting is completed.

7. Communication

The sensor can connect to PC serial interface through DB-9 interface, if the transmitting distance exceeds 15meters long, source code distortion is 4% only. If the sensor is connected to PC serial interface through standard 485-232 interface, when the transmitting distance is 1500meters long, the source code distortion do not exceed 4%, and this comply to EIA strictly. Please use shielded pair-twisted cables for long distance transmitting.

The process of PC read sampling value from lower machine:

When the PC wants to read data, it should send "read data command" to the sensor. If the sensor receives the command properly, it will answer data to PC; if the sensor can not receive the command properly, it will not answer. PC should re-send "read data command" to the sensor.

Note: All data are HEX number, at any time, if the PC can not receive the answer from the sensor after it send command to the sensor, the PC need to resend "read data command" to the sensor till it get correct answer.
Using standard MODBUS-RTU communication protocol, when using the configuration software, the selected equipment MODBUS-RTU is address type, and the data is integrated 16 bit. It supports MODBUS protocol "03H", "04H", "06H" command (03H and 06H is read and write parameter, 04H is read measuring value.)

The details of parameter and corresponding function, please refer to table 1 on last page.

Example 1: Read temperature measured value (measured value=21.5)

Send data: 01 04 00 00 00 01 31 CA
Among the data: 01 is local address
                04 is communication command
                00 00 is register starting address
                00 01 means read one number
                31 CA is parity check code
Answer data: 01 04 02 00 D7 F9 6E (00 D7 corresponding to measured value)

Among the data: 01 is local address

04 is communication command

02 is answer data that is the number of bytes of the measured value

00 D7 is corresponding to measured value (00 D7 is binary data with symbol and represented by HEX, this binary data is switched to 00D7 after making compensation code. And then switched to decimal number 215, then use 215 divided by 10 and get 21.5, this means actual measured temperature is 21.5.

F9 6E is CRC check code.

Example 2； Read temp. and humidity measured value (temperature value =3.3 and humidity value = 16.2)

Send data: 01 04 00 00 00 02 71 CB

Among the data: 01 is local address

04 is communication command

00 00 is register starting address

00 02 means read two number

71 CB is check code

Answer data: 01 04 04 FF DF 00 A2 7B D3 (FF DF corresponding to temperature measured value, 00 A2 corresponding to humidity measured value.)

Among the data: 01 is local address

04 is communication command

04 is returned value that is the number of bytes of measured value

FF DF is corresponding to temperature value (FF DF is binary data with symbol and represented by HEX, this binary data is switched to 021 after making compensation code. And then switched to decimal number -33, then use -33 divided by 10 and get -3.3, this means actual measured temperature is 3.3.)

00 A2 is corresponding to humidity value (00 A2 is binary data with symbol and represented by HEX, this binary data is switched to 00A2 after making compensation code. And then switched to decimal number 162, then use 162 divided by 10 and get 16.2, this means actual measured temperature is 16.2.)

B9 83 is check code.

Example 3: read local address (local address=1)

Send data: 01 03 00 00 00 01 84 0A

Among the data: 01 is local address

03 is communication command

00 00 is register starting address

00 01 means read one number

84 0A is check code

Answer data: 01 03 02 00 01 79 84
Among the data: 01 is local address
03 is communication command
02 is returned data that is the number of bytes of local address
79 84 is check code

Example 4: write local address (local address=1, the write value =2)

Send data: 01 06 00 00 00 02 08 0B
Among the data: 01 is local address
06 is communication command
00 00 is register starting address
00 02 is parameter values
08 0B is check code
The answer data should be same as send data.

8. RS485 Communication Explanation

The communication cable of RS-484 is adopting shielded twisted-pair cable, one cable end is connected to PC serial communication interface through RS-232/484 module, and anther cable end is connected to the communication terminal of RS-485 module.

The shielding layer of two-core shielded cable had better be connected to device protective GND through single end. When one PC is connected to many instruments, the network topology structure should be mine line, every device must be connected with main line in parallel, in order to reduce the interference of signal reflections. Please use relay modules if the communication distance is too long.

9. Application Notice and Quality Assurance

(1) This product is not suitable for use in condensation or chemical pollution environment for long time.
(2) The working temperature of the product is -10~80 deg. For the product with indicator, please use it in -20~60 deg.
(3) Please make sure the wirings are correct before power supply.
(4) When connect the sensor to PC data line, please take off the power supply of sensor and PC, to avoid communication line is burned by wrong operation; when disconnect communication data line, please also take off the power supply of sensor and PC.
(5) Please store the sensor at good conditions (propose room temperature and humidity is 30~70%RH).
(6) We provide 12 months quality assurance from the date of shipment for our products. We will also provide repair service after product out of quality

assurance times.

(7) Please do not disassembly or repair the products by yourself. Please contact UTOP if you meet any problem, and our technical engineer will give professional suggestion. All results caused by wrong operation for the products will be borne by yourself.

Thanks for choosing our products!

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