The wall wangzi shell Temperature and humidity transmitter operation instructio
（Type 485）

Document version：V1.2

Context

1. Product Introduction

1.1 Product summary

This product is widely applied in communication engine room、automation、automatic control where needs the temperature and humidity monitor .The three parts about input power supply, temperature measurement unit and signal output of sensor are completely isolated. Safe and reliable, beautiful appearance, easy installation.

1.2 Function feature

Applying Swiss inward measure unite, measurement accuracy, and using professional 485 electric circuit makes the communication stable. Powered by 10V-30V wide voltage, Complete specifications and convenient to install.

1.3 Main technology parameter

Supply power：10~30V DC   Temperature accuracy：±0.5℃(default)

Humidity measurement range ： 0~100% RH   Work environment ： -20 ℃

Temperature measurement range：-40℃ ~60℃,0~80%RH
~80℃(personal)   Output signal：RS485

Humidity accuracy：±3%RH(default)   Parameter configuration：software setting

1.4 System frame diagram
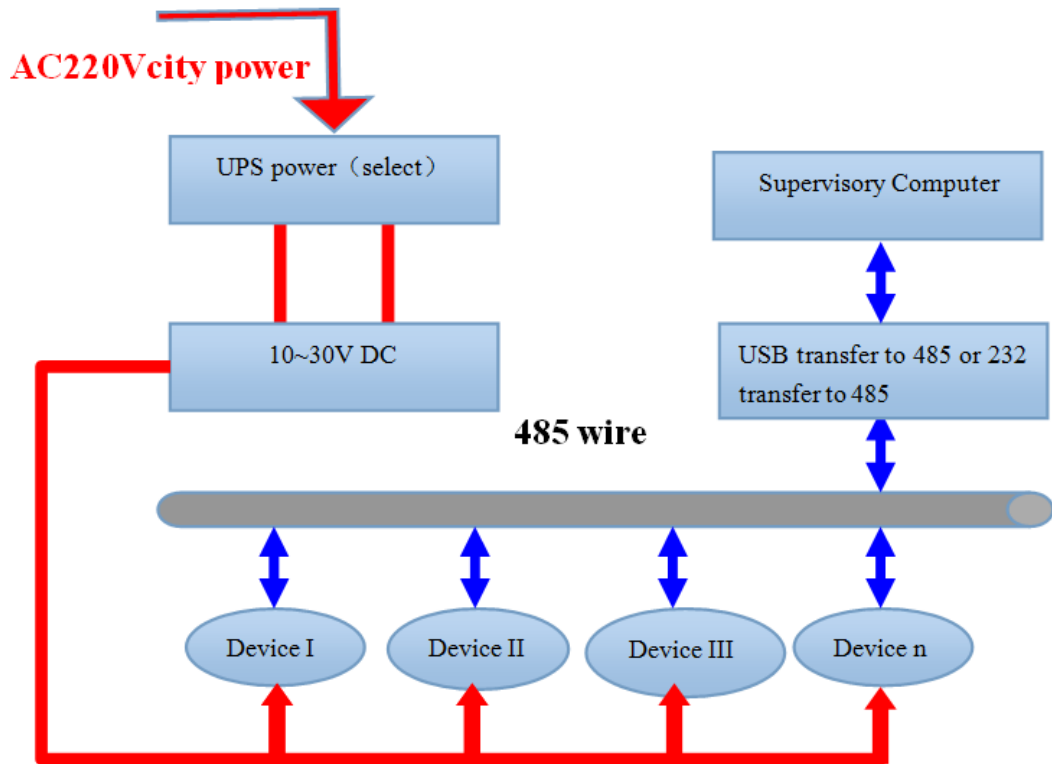
2. Product Selection

2.1The wall wangzi shell

RS-						Code of Ren Ke corporate
	WS-					Humiture variable and sensor
		N01-				485 communication（Modbus-RTU）
			2-			The wall wangzi shell
				1-		Built-in copper head
				2-		Built-in PE head
				3-		Built-in Siemens head
				6-		External waterproof probe
				7-		External high-sensitivity probe
				8-		External common probe
				9-		External metal waterproof probe
				A-		External long metal probe

					B-		External wide temperature probe
						B1	Built-in buzzer
						R1	1 relay normally open
						R2	2-way relay normally open

2.2 Probe Selection Table

Temperature and humidity selection table

6 External waterproof probe Φ17*70mm

9 External metal waterproof probe Φ15*86mm

7 External high sensitivity probe Φ17*70mm

A External long metal probe Φ18*120mm

8 External common probe 64*26*16mm

B External wide temperature probe Φ22*85mm
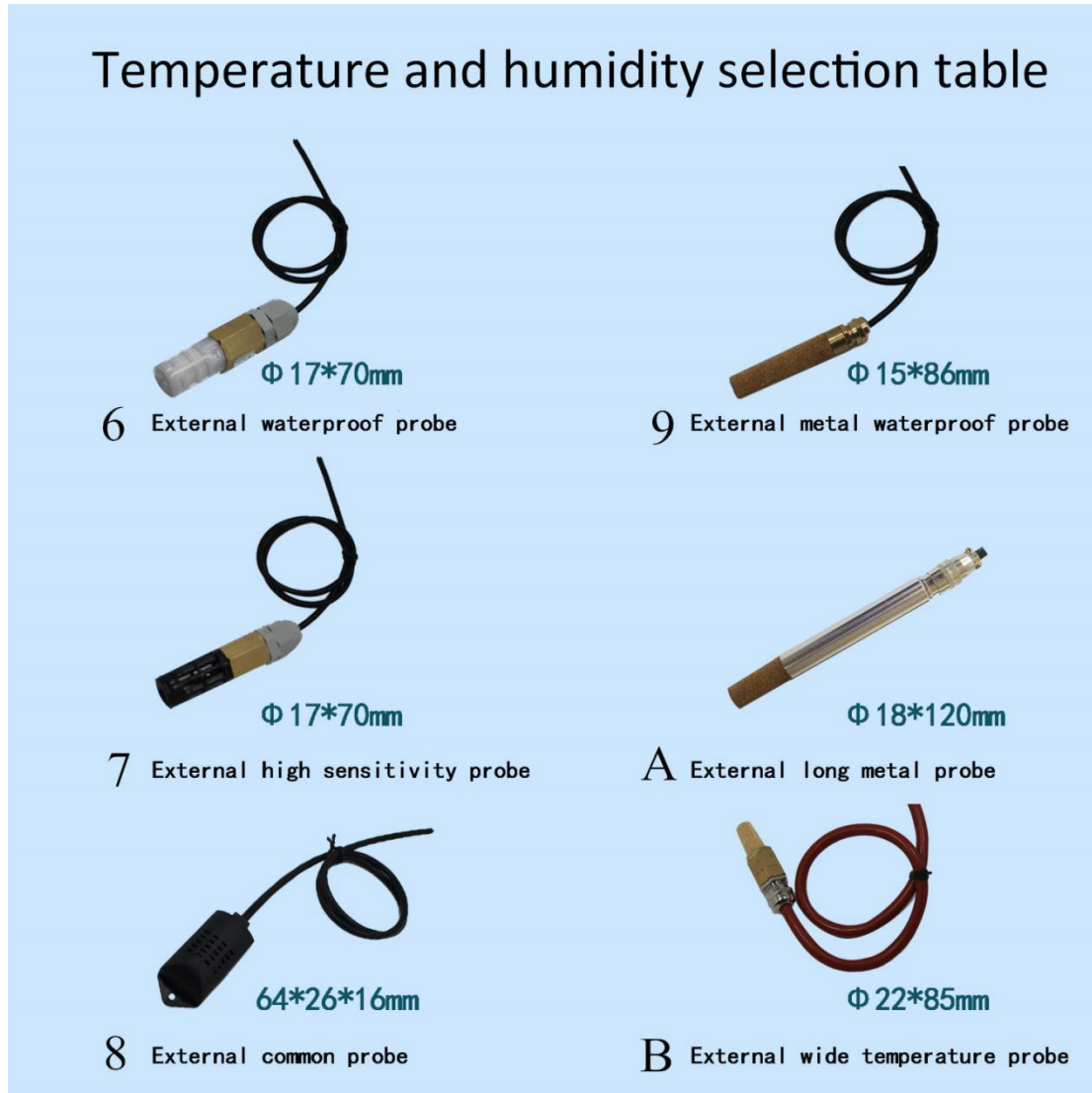
3. Device Installation Instruction

3.1 Check before the device installation

Device list:

■One transmitter equipment

■Certificate, warranty card, and after sales service card and so on

■one 12V/2A waterproof power（select）

■USB transfer to 485（select）

■485terminal resistance（select）

3.2 Joggle instruction

3.2.1 Power and 485 signals

Range 10V-30V of wide voltage is available in power input, the A wire and B wire can not be connected contrary when connecting to 485 signal, and the address among several devices on the total wire can not be conflicted.

3.2.2 Relay Interface Wiring

Optional 1 or 2-way relay normally open contact output. Optional built-in buzzer alarm.

3.3 Specific model wiring

Wall wangzi shell wiring

		Line color	Description
power		brown	Power supply is (10 ~ 30V DC)
		black	Power supply negative
Communication		yellow	485-A
		blue	485-B

3.4 485 field wiring instructions

Multiple 485 models of equipment access the same bus, the field wiring has certain requirements, please refer to the specific parameters

Test data packets in the "485 device field wiring manual."

4. Configuration Software Installation and Application

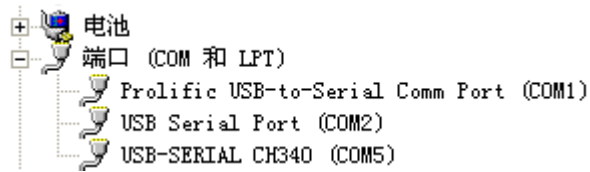## 4.1 Software selection

Opening the datagram, and choosing "test software" ---- "485 parameter setting software"

and finding out 485 parameter configuration tool KTControl Micros... and opening it.

4.2 Parameter setting

① select the right COM port ("my computer——properties——deceive manager——Port") and check the COM port from the Port, the name of several different kinds of 485 transmitter drive

```
田—🖳 电池
白—🖉 端口 (COM 和 LPT)
    🖉 Prolific USB-to-Serial Comm Port (COM1)
    🖉 USB Serial Port (COM2)
    🖉 USB-SERIAL CH340 (COM5)
```

② connect with only one device and be powered, and click "test the baud rate" of the software to test the device baud rate and address, the default baud rate is 4800bit/s and default address is 0x01

③change the address and baud rate based on the application requirement, and meanwhile the current situation of the device function can be checked

④if the test is not success, please check the device wring and 485 drive installation situation again
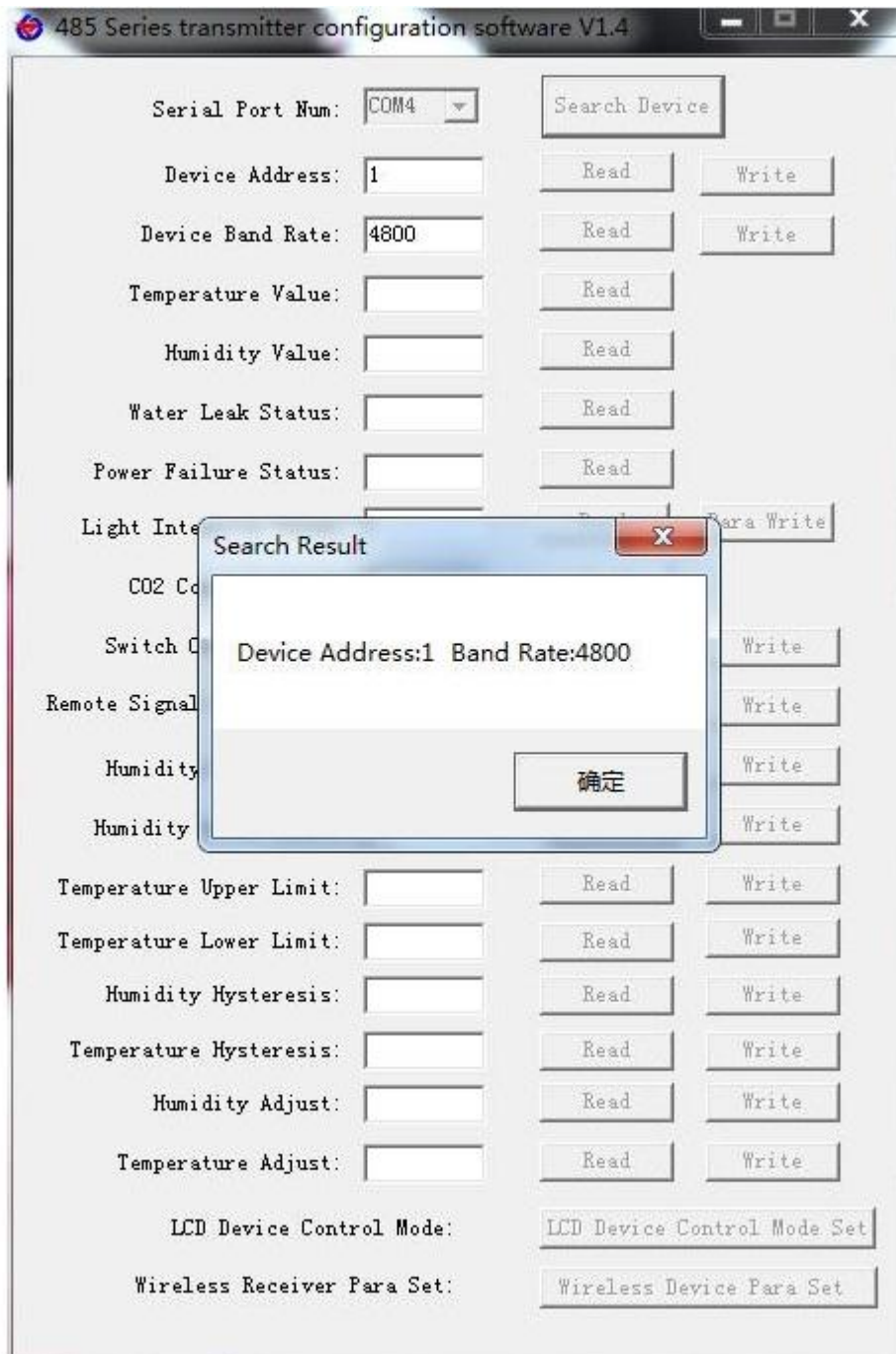
5. Communication Agreement

5.1 Communication basic parameter

Code	8 bit binary system
Data Bit	8 bit
Odd-even Revi-sion Bit	None

Stop Bit	1bit
Incorrect Revis-ion	CRC（Redundant cyclic codes）
Baud Rate	2400bit/s, 4800bit/s, 9600 bit/s options, the factory default 4800bit/s

5.2 The concept of data frame format

Apply Modbus-RTU communication rules，the format below：

Initial structure ≥4 byte time

Address code = 1 byte

Function code = 1 byte

Data area = N byte

Incorrect revision = 16 byte CRC code

Ending structure ≥4 byte time

Address code：the address of the transmitter，and will be the only (factory default 0x01) in the communication net..

Function code：the order function orders from host computer, this transmitter only uses function code 0x03(reading register date).

Data area：data area is the specific communication data, attention16bits data high byte in front!

CRC code：two byte revision code.

Main computer enquires frame structure

Address Code	Function Code	Register Origin Address	Register Length	Revision Code in Low Position	Revision Code in High Position
1byte	1byte	2bytes	2bytes	1byte	1byte

Accessorial computer replying frame structure：

Address Code	Function Code	Effectiveness Byte NO.	Data Area One	Data Area Two	Data Area N	Revision Code
1byte	1byte	1byte	2bytes	2bytes	2bytes	2bytes

5.3 Register address

Register Address	PLC or Configuration Address	Content	Operation
0000 H	40001	Humidity	Read only

0001 H	40002	Temperature	Read only

5.4 Communication agreement example and explaining

5.4.1 For example：reading price of temperature and humidity in device address 0x01

enquiry frame：

Address Code	Function Code	Origin Address	Data Length	Revision Code in Low Position	Revision Code in High Position
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0B

Replication frame： (when reading temperature is -10.1℃，humidity is 65.8%RH）

Address Code	Function Code	Return Byte Number	Humidity Number	Temperature Number	Revision Code in Low Position	Revision Code in High Position
0x01	0x03	0x04	0x02 0x92	0xFF 0x9B	0x5A	0x3D

Temperature calculation ：

When temperature is under 0 ℃, the temperature date will be updated in complement code.

Temperature：FF9B H(hexadecimal)= -101 => temperature = -10.1℃

Humidity calculation：

Humidity：292 H (hexadecimal)= 658 => humidity = 65.8%RH

6. Common Problem and Solution

6.1 Device can not be connected with PLC or computer

Reasons possible:

1) Several COM ports in the computer, the port be chosen is incorrect.

2) The device address is wrong, or some device addresses are repeat.(all factory defaults are 1).

3) Baud rate, revision mode, data position and stop position are wrong.

4) The main computer and polling interval is too small and time waiting for replying is too short, and

all need to set over 200ms.

5) The 485 general wire is broken or the A wire and B wire are connected in the wrong side.

6) Too many devices or too long wires, the power need to be chosen nearby, add 485

intensifier, and add 120Ω

　　terminal electric resistance.

　　7) The driver of USB transfer to 485is not installed or damaged.

　　8) The device is broken..

7. Contact Information

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Website address: www.temperaturehumiditysensor.com

8. Document History

V1.0　　Document building.

V1.1　　add a variety of card rail shell.

V1.2　　increase wiring rules and solutions to common problems.

9. Shell Size

The wall wangzi shell ：110×85×44mm