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**RS-CO2-N01**  
**RS-CO2WS-N01**  
**CO2 temperature and humidity**  
**transmitter operation instruction**  
**(485 type)**

Document version: V1.2



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## 1. Product Introduction

### 1.1 Product summary

The transmitter is widely used in communication room, warehouse buildings and automatic temperature and humidity monitoring needs of the place, the sensor input power, temperature measurement unit, the signal output is completely isolated from three parts. Safe, reliable, beautiful appearance, easy installation.

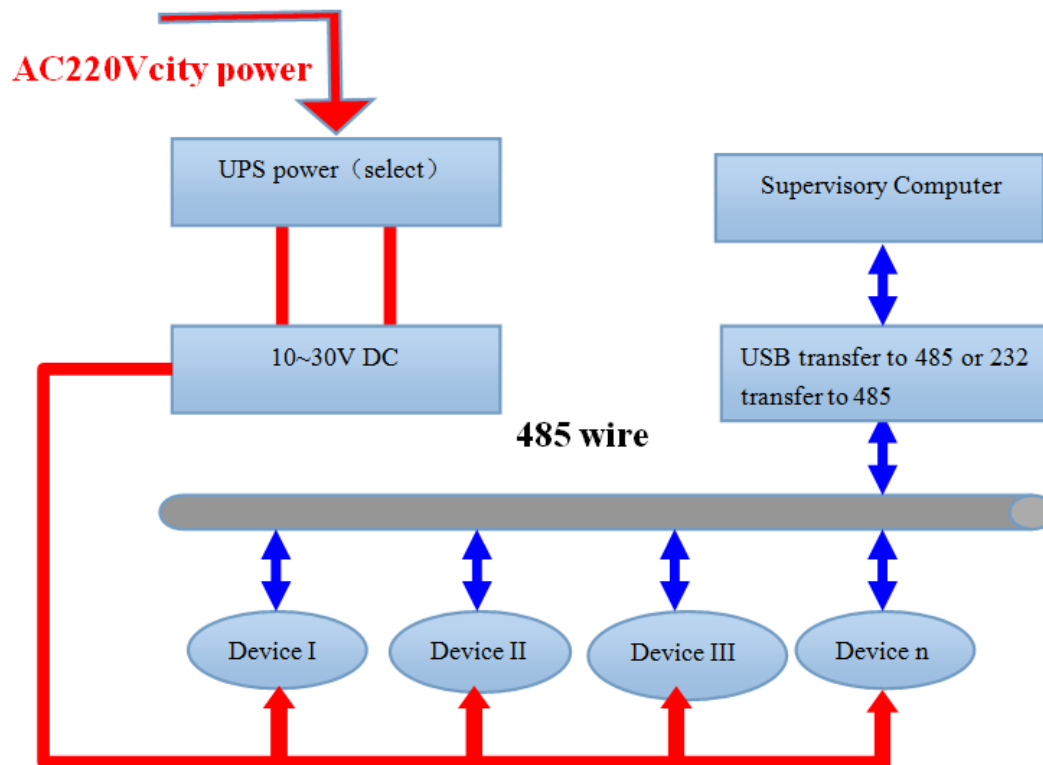
### 1.2 Function feature

This product uses high sensitivity gas detection probe, signal stability, high precision. With a wide measuring range, good linearity, easy to use, easy to install, transmission distance and so on.

### 1.3 Main technology parameter

Power supply: 10 ~ 30V DC	average current: <85mA
CO2 Measurement range: 0 ~ 5000ppm (can be customized)	
Accuracy of CO2: $\pm (40\text{ppm} + 3\% \text{ F} \cdot \text{S}) (25\text{ }^\circ\text{C})$	
Temperature measurement range: $-40\text{ }^\circ\text{C} \sim 80\text{ }^\circ\text{C}$	Temperature accuracy: $\pm 0.5\text{ }^\circ\text{C}$
Humidity measurement range: 0 ~ 100% RH	Humidity accuracy: $\pm 3\% \text{ RH}$
Stability: $<2\% \text{ F} \cdot \text{S}$	Nonlinearity: $<1\% \text{ F} \cdot \text{S}$
Data Update Time: 2s	Warm-up time: 2min (available), 10min (maximumprecision)
Temperature effects: comes with temperature Compensation	Output signal: 485, relay (optional)

## 1.4 System frame diagram



## 2. Device Installation Instruction

### 2.1 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)

### 2.2 Joggle instruction

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.

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





## 2.3 485 field wiring instructions

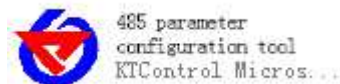
Multiple 485 models of equipment access the same bus, the field wiring has certain requirements, please refer to the specific parameters

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

## 3. Configuration Software Installation and Application

### 3.1 Software selection

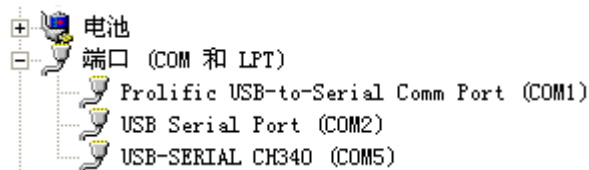
Opening the datagram, and choosing "test software" ---- "485 parameter setting software"



and finding out and opening it.

### 3.2 Parameter setting

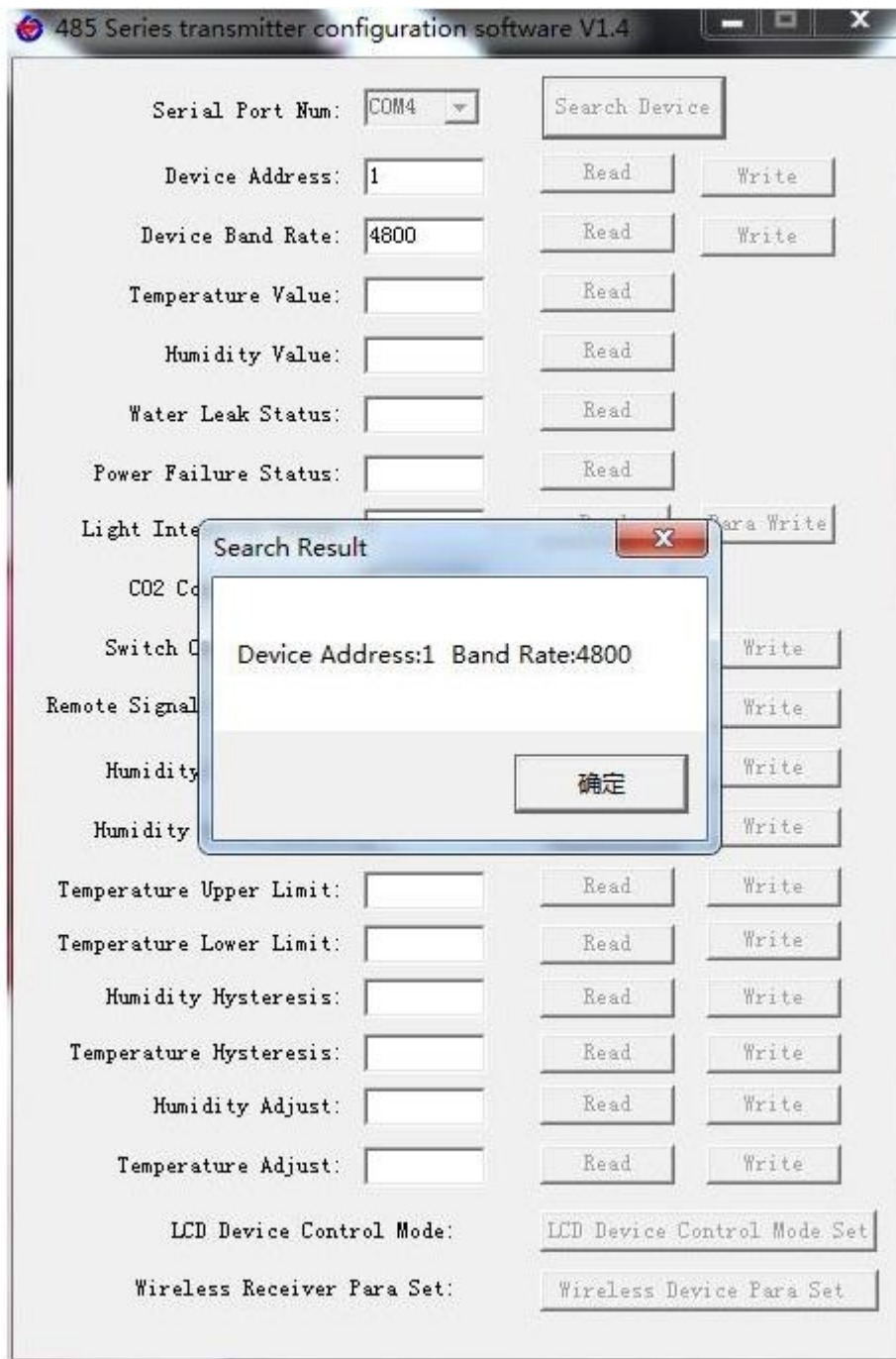
① select the right COM port ("my computer—properties—deceive manager—Port") and check the COM port from the Port, the name of several different kinds of 485 transmitter drive



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





## 4. Communication Agreement

### 4.1 Communication basic parameter

Code	8 bit binary system
Data Bit	8 bit
Odd-even Revision Bit	None
Stop Bit	1bit
Incorrect Revision	CRC (Redundant cyclic codes)
Baud Rate	2400bit/s, 4800bit/s, 9600 bit/s options, the factory default 4800bit/s

### 4.2 The concept of data frame format

Apply Modbus-RTU communication rules, the format below:

Initial structure  $\geq 4$  byte time

Address code = 1 byte

Function code = 1 byte

Data area = N byte

Incorrect revision = 16 byte CRC code

Ending structure  $\geq 4$  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, attention 16bits 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	Effective Address Byte NO.	Data Area One	Data Area Two	Data Area N	Revision Code
1byte	1byte	1byte	2bytes	2bytes	2bytes	2bytes

### 4.3 Register address

Register Address	PLC or Configuration Address	Content	Operation	Scope and definition of the definition
0000 H	40001	Temperature	Read only	0~1000
0001 H	40002	humidity	Read only	-400~1000
0002 H	40003	CO2 concentration	Read and write	0~5000
0030 H	40049	Temperature upper limit alarm value	Read and write	-400~1000
0031 H	40050	Temperature lower limit alarm value	Read and write	-400~1000
0032 H	40051	Temperature alarm back to the difference	Read and write	0~1000
0033 H	40052	Temperature calibration value	Read and write	-400~1000
0034 H	40053	The temperature relay is enabled	Read and write	1 is enabled, 0 is disabled
0035 H	40054	High humidity alarm value	Read and write	0~1000
0036 H	40055	Low alarm	Read	0~1000



		value of humidity	and write	
0037 H	40056	Humidity alarm back to the difference	Read and write	0~1000
0038 H	40057	Humidity calibration value	Read and write	-400~1000
0039 H	40058	The humidity relay is enabled	Read and write	1 is enabled, 0 is disabled
003a H	40059	CO2 high alarm value	Read and write	0~5000
003b H	40060	CO2 lower limit alarm value	Read and write	0~5000
003c H	40061	CO2 alarm back to the difference	Read and write	0~5000
003d H	40062	CO2 calibration value	Read and write	-2000~2000
003e H	40063	CO2 relay is enabled	Read and write	1 is enabled, 0 is disabled
0040 H	40065	Relay Status	Read and write	1 for the suction, 0 for the disconnect

#### 4.4 Communication agreement example and explaining

##### 4.4.1 For example: Read the CO2 value at device address 0x01

enquiry frame:

Address Code	Function Code	Start Address	Data Length	Check Digit Low	Check Digit High
0x01	0x03	0x00 0x02	0x00 0x01	0x25	0xCA

Replication frame: (For example, read CO2 to 3000 ppm)

Address	Function	Returns the number of valid bytes	Light intensity	Check digit low	Check digit high



Code	Code		value	w	
0x01	0x03	0x02	0x0B 0xB8	0xBF	0x06

CO2:

BB8 H (Hex) = 3000 => CO2 = 3000 ppm

**4.4.2 For example: Read the CO2 with Temperature and humidity value at device address 0x01**

enquiry frame:

Address Code	Function Code	Start Address	Data Length	Check Digit Low	Check Digit High
0x01	0x03	0x00 0x00	0x00 0x00	0x05	0xCB

Replication frame: (when reading temperature is -7.5°C , humidity is 35.9%RH, CO2 is 3000ppm)

Address Code	Function Code	Valid bytes	Humidity value	Temperature value	CO2 value	Check digit low	Check digit high
0x01	0x03	0x06	0x01 0x67	0xFF 0xB5	0x0B 0xB8	0x33	0xDC

## 5. Common Problem and Solution

### 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.

## 6. Contact Information

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## 7. 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.

## 8. Shell Size

The overall size: 110 × 85 × 44mm

