RS-GZ-N01
RS-GZWS-N01
Light intensity with temperature and humidity transmitter operation instruction
（Range:0-200000lux）

Document version：V1.3

Context

1. Product Introduction

1.1 Product summary

This product is widely applied in agricultural greenhouses or flower cultivation where needs the temperature and humidity monitor or light intensity .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.

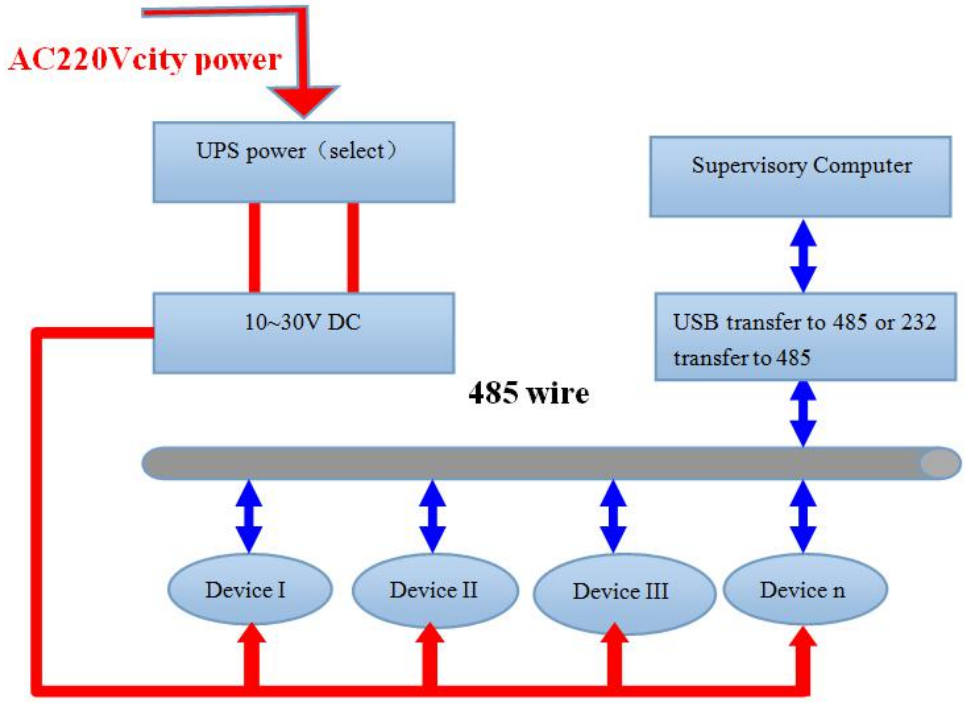
1.2 Function feature

This product uses high sensitivity probe.The output signal is stable.This product powered by 10V-30V wide voltage, complete specifications and convenient to install.

1.3 Main technology parameter

Power supply voltage（default）	10-30VDC	
Maximum power dissipation	RS485 Output	0.4W
Degree of accuracy（default）	Humidity	±3%RH(5%RH~95%RH,25℃)
	Temperature	±0.5℃（25℃）
	Light intensity	±7%(25℃)
Range of light intensity	0-200000Lux	
Range of temperature and humidity	-20℃~+60℃，0%RH~80%RH	
Long-term stability	Humidity	≤0.1℃/y
	Temperature	≤1%/y
	Light intensity	≤5%/y
Reaction time	Humidity	≤18s(1m/s wind speed)
	Temperature	≤6s(1m/s wind speed)
	Light intensity	0.1s
Output signal	RS485	RS485(（Modbus-RTU))
About model		
RS-GZ-N01-2-0-20w(Light intensity) RS-GZWS-N01-2-20w(Light intensity with temperature and humidity)		

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）

■485 terminal resistance（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
Communication	Yellow	485-A
	Blue	485-B

2.3 Field wiring instructions

When multiple 485 devices are connected to the same bus,site wiring has specific requirements,details please refer to the package,details please refer to the "485 equipment site wiring manual.

3. Configuration Software Installation and Application

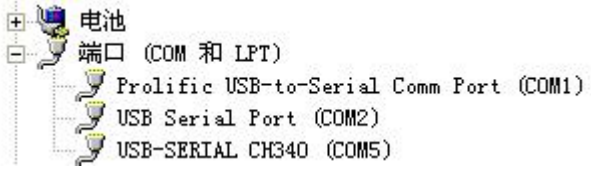
3.1 Software selection

Opening the datagram, and choosing “test software” ---- “485 parameter setting software” and finding out 

and opening it.

3.2 Parameter setting

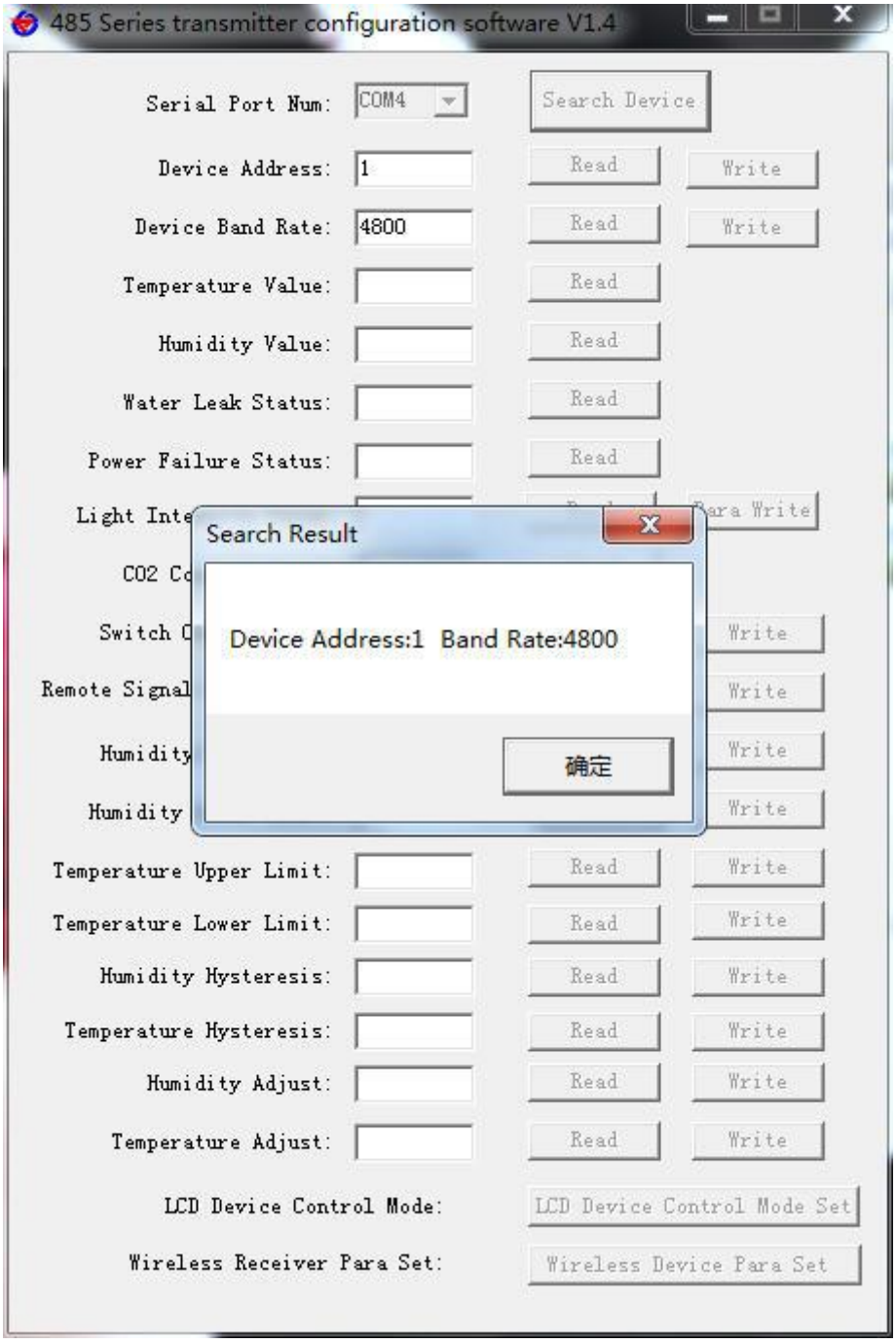
① select the right COM port (“my computer——properties——deceive manager——Port”) and check the COM port from the Port, the name of several different kinds of 485 transmitter drive



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 Revi-sion Bit	None
Stop Bit	1bit

Incorrect Revis-io n	CRC（Redundant cyclic codes）
Baud Rate	2400bit/s, 4800bit/s, 9600 bit/s options, the factory default 4 800bit/s

4.2 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

AddressCode	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

4.3 Register address

Register Address	PLC or Configuration Address	Content	Operation

0000 H	40001	Temperature	Read only
0001 H	40002	Humidity	Read only
0002 H	40003	Light intensity（Unit is 1Lux）	Read only
0003 H	40004		
0006 H	40007	Light intensity（Unit is 100Lux）	Read only

4.4 Communication agreement example and explaining

4.4.1 reading the value 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

4.4.2 reading the value of light intensity in device address 0x01(Unit is 100Lux)

Address Code	Function Code	Origin Address	Data Length	Revision Code in Low Position	Revision Code in High Position

0x01	0x03	0x00 0x06	0x00 0x01	0x64	0x0B

Enquiry frame：

Replication frame： (when reading light intensity is 132800 Lux）

Address Code	Function Code	Return Byte Number	Data Area	Revision Code in Low Position	Revision Code in Low Position
0x01	0x03	0x02	0x05 0x30	0xBB	0x00

Calculation instructions: (Unit is 100Lux)

0530 H(Hexadecimal)= 1328=> Light intensity=132800 Lux

4.4.3 reading the value of light intensity in device address 0x01(Unit is 1Lux)

Enquiry frame：

Address Code	Function Code	Origin Address	Data Length	Revision Code in Low Position	Revision Code in High Position
0x01	0x03	0x00 0x02	0x00 0x02	0x65	0xCB

Replication frame： (when reading light intensity is 132800 Lux）

Address Code	Function Code	Return Byte Number	Data Area		Revision Code in Low Position	Revision Code in Low Position
0x01	0x03	0x04	0x00 0x02	0x06 0xC0	0x58	0x03

Calculation instructions: (Unit is 100Lux)

206C0 H(Hexadecimal)= 132800=> Light intensity=132800 Lux

4.4.4 reading the value of light intensity with temperature and humidity in device address 0x01(Unit is 100Lux)

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 0x07	0x04	0x08

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

Address Code	Function Code	Return Byte Number	Humidity Number	Temperature Number	**	Light intensity	CRC
0x01	0x03	0x0E	0x02 0x92	0x80 0x65	Fill 00	0x05 0x30	0xC4 0x33

light intensity is 1328 Lux）

4.4.5 reading the value of light intensity with temperature and humidity in device address 0x01(Unit is 1Lux)

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 0x04	0x44	0x09

Replication frame： (when reading temperature is -10.1℃， humidity is 65.8%RH, light intensity is 200000 Lux）

Address Code	Function Code	Return Byte Number	Humidity Number	Temperature Number	Light intensity		CRC
0x01	0x03	0x08	0x02 0x92	0x80 0x65	0x00 0x03	0x0D 0x40	0x01 0x6F

5. Common Problem and Solution

5.1 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.

6. Contact Information

Shandong Renke Control Technology Co., Ltd.

Post code：250101

Tel：+86-531-58720832

Fax：+86-531-67805165

Website address: www.temperaturehumiditysensor.com

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

Total size:110×85×44mm