Manual

RS485/4-20m Smoke Sensor

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Chapter I Product Overview

1.1 Introduction

This product is a photoelectric smoke fire detector (hereinafter referred to as the detector). The product adopts unique structural design and photoelectric signal processing technology. It has the functions of dust prevention, insect prevention and light interference, which ensures the stability of the product in design. This product has a good response to the visible smoke produced by slow smoldering or open burning. It is suitable for fire alarm in residential buildings, factories, shopping malls, hotels, office buildings, teaching buildings, banks, libraries, warehouses and other places.

1.2 product description

The product uses the principle that particles in smoke refract infrared light to detect fire. The circuit is mainly composed of infrared transmitting part and receiving part. The transmitting tube and receiving tube are placed in the optical maze, which can shield the interference of external stray light, but does not affect the entry of smoke. When the smoke enters the smoke maze, the smoke particles will scatter part of the light beam onto the sensor. When the smoke concentration increases to a certain extent, the buzzer will be triggered by the amplification circuit.

1.3 Sensor characteristics

Small and light in shape, easy to assemble and support a variety of communication modes.

1.4 Applicable Scenarios

It is suitable for fire alarm in residential buildings, factories, shopping malls, hotels, office buildings, teaching buildings, banks, libraries, warehouses and other places.

1.5 Precautions For Use

the sensor is made of waterproof, dustproof and impact resistant materials, but the precision instrument needs to be used and maintained carefully to avoid impact and use in harsh environments such as corrosive liquid or gas.

when using, please pay attention to whether there are requirements to restrict the use of wireless communication equipment on this occasion. If there are such restrictions, please do not use the equipment. For example, in the process of aircraft flight and takeoff and landing, gas stations, gas stations or other occasions with inflammables and explosives.

avoid contacting organic solvents (including silicone rubber and other adhesives), coatings, chemicals, fuel oils and high concentration gases，

the sensor shall not be subjected to excessive impact or vibration;

it is forbidden to encapsulate the sensor with hot melt adhesive or sealant with curing temperature higher than 80 ℃.

Chapter II Product Introduction

2.1 Product Appearance

2.2 product interface

The equipment provides one power supply. The DC range of power input is 9 ~ 18V. The AC to DC power supply provided by crystal can be used, and 12V solar panel and battery can also be used for power supply to meet the needs of different occasions.

2.3 Paraments

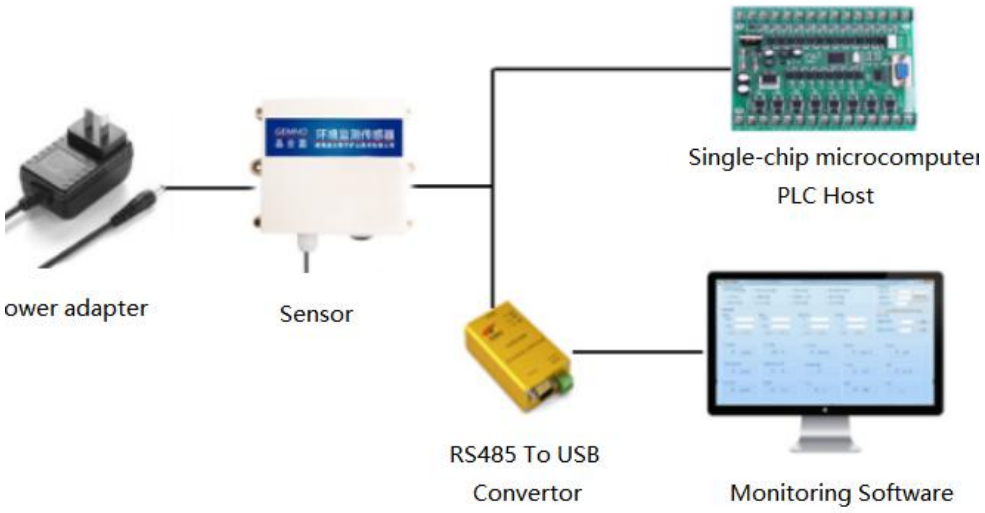
Name	Paraments
Power	DC 9-18V
Communication mode	RS485
Output Signal	Alarm tone
Switching value type	Normally open contact
Detection object	Indoor smoke status
Coverage area	When the space height is 6m-12m, the protection area of a detector is 80 square meters for the general protection site; When the space height is less than 6m, the protection area is 60 square meters.
Alarm duration	30S

Alarm Lamp Status	10s flashes once to prove that the equipment is in normal working state .Flash after alarm
Size	58*106*106mm
Temperature	-20℃~60℃
Humidity	25%RH~80%RH
Pressure	± 10%
Waterproof Grade	IP67

⚠Note: for the black key on the sensor, long press for a long time and short press for a short time. Only test whether the buzzer and signal lamp are normal.

Chapter III System Architecture

3.1 RS485 Ooutput Signal



Chapter IV installation instructions

4.1 Inspection before equipment installation

Equipment list:

■ one set of 485 output version sensor equipment of smoke sensor

■ one copy of product certificate, warranty card and instruction manual

■ power adapter (optional)

4.2 installation instructions

Ceiling mounted design is adopted. A mounting port is reserved at the bottom, which can be fixed with screws or expansion wires through the mounting port.

4.3 Wiring instructions

（1）RS485

Name	Line Name	Line Color
Power Supply	Positive power supply	Red
	Negative power supply	Black
Output Signal	RS485A	Green
	RS485B	Blue

Note: Please strictly follow the wiring sequence instructions, otherwise it is easy to cause excessive current and damage the equipment.

The switching value is a passive switching value signal, which needs to be connected in series to your own circuit. The power of the switching value is small. If you need to connect the power device, please connect the intermediate relay.

Chapter V RS485 Communication Protocol And Host Computer Configuration

5.1 RS485 Communication Protocol And Description

Parameter	Content
Coding	8 bit Binary
Data bit	8-bit
Parity bit	Without
Stop bit	1-bit
Error Check	CRC（redundant cyclic code）
Baud Rate	9600 bit/s

5.2 Data frame format definition

Adopt Modbus-RTU communication protocol, the format is as follows:

Initial structure ≥ 4 bytes of time

Address code = 1 byte

Function code = 1 byte

Data area = N bytes

Error check = 16-bit CRC code

End structure ≥ 4 bytes of time

Address code: is the address of the transmitter, which is unique in the communication network (factory default 0x01). Function code: The instruction function of the command sent by the host. This transmitter only uses function code 0x03 (read register data). Data area: The data area is the specific communication data. Note that the16-bit data high byte is in front!

CRC code: Two-byte check code.

(1) Read the current smoke value of the device address 0x01

Inquiry Frame：

Address Code	Function Code	Register Start Address	Register Length	CRC L	CRC H
0x01	0x03	0x00,0x24	0x00,0x01	0xC4	0x01

Answer Frame：

Address Code	Function Code	Effective number of bytes	Smoke Value	CRC L	CRC H
0x01	0x03	0x02	0x00,0x01	0x79	0x84

Smoke detection calculation:

01h (HEX) = > smoke

00h (HEX) = > smokeless

（2）Query device address

Reading the current device address can only be completed independently by a single offline sensor.

Example of querying equipment address:

Send: FF 03 00 0f 00 01 A1 D7

Return: FF 03 01 00 60

The data returned by the sensor 0x01 is the device address 0x01.

5.3 Upper computer reads equipment data and software configuration

（1）Connect the device to the computer

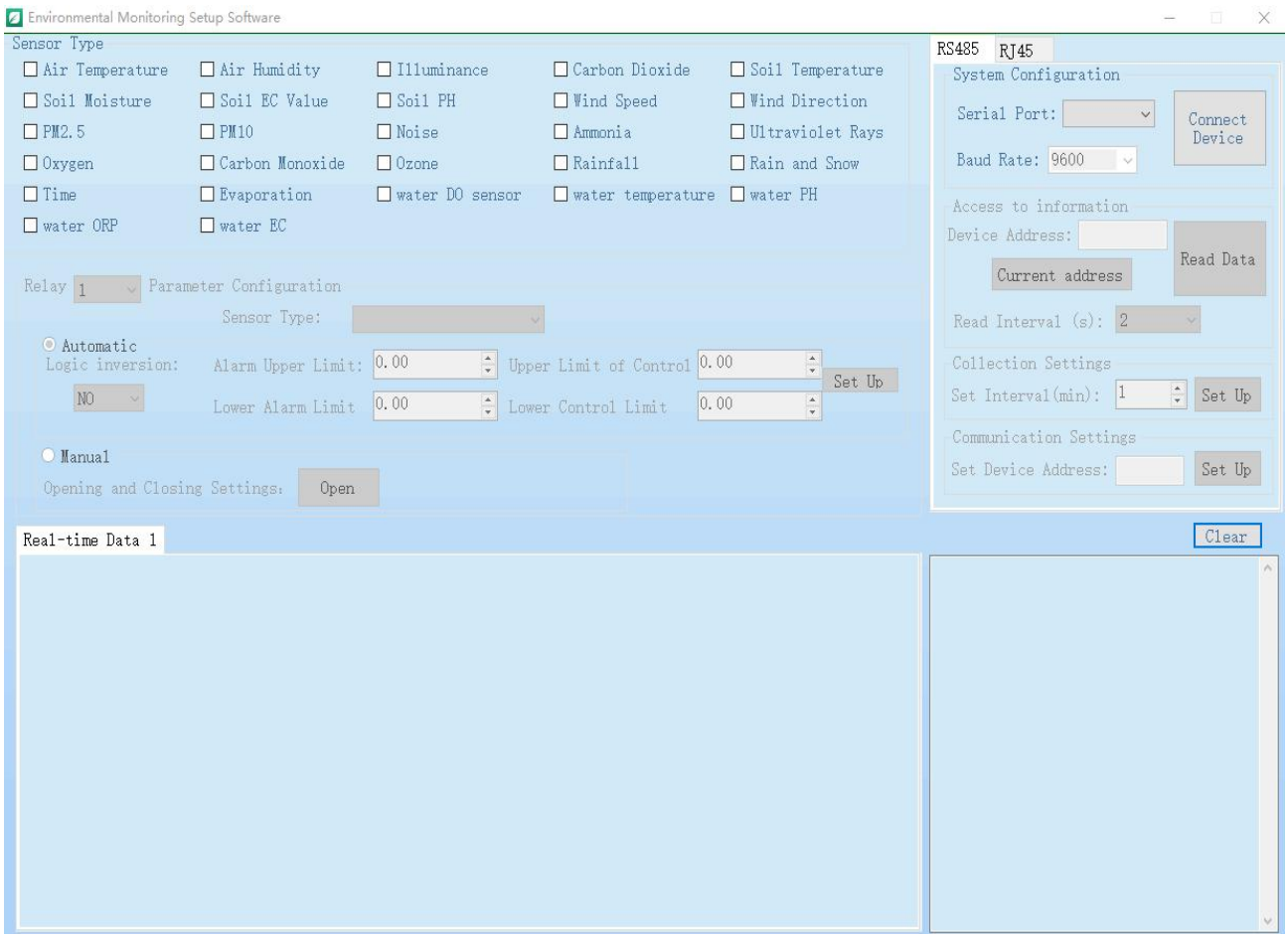
The device is connected to the computer serial port through "RS485 to USB" or "RS485 to 232" devices.

（2）Check whether the device is connected

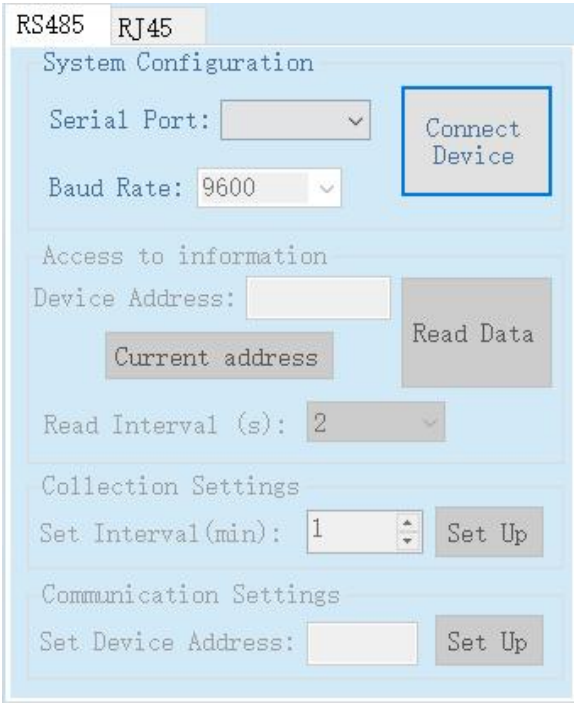
1）Open the computer device manager, check whether a new device is added under the port (COM and LPT), and remember the port number of this device (the following figure is only a schematic diagram, and the port numbers displayed on different computers are different)

（3）Read Data

1）Run "environmental monitoring setting software".

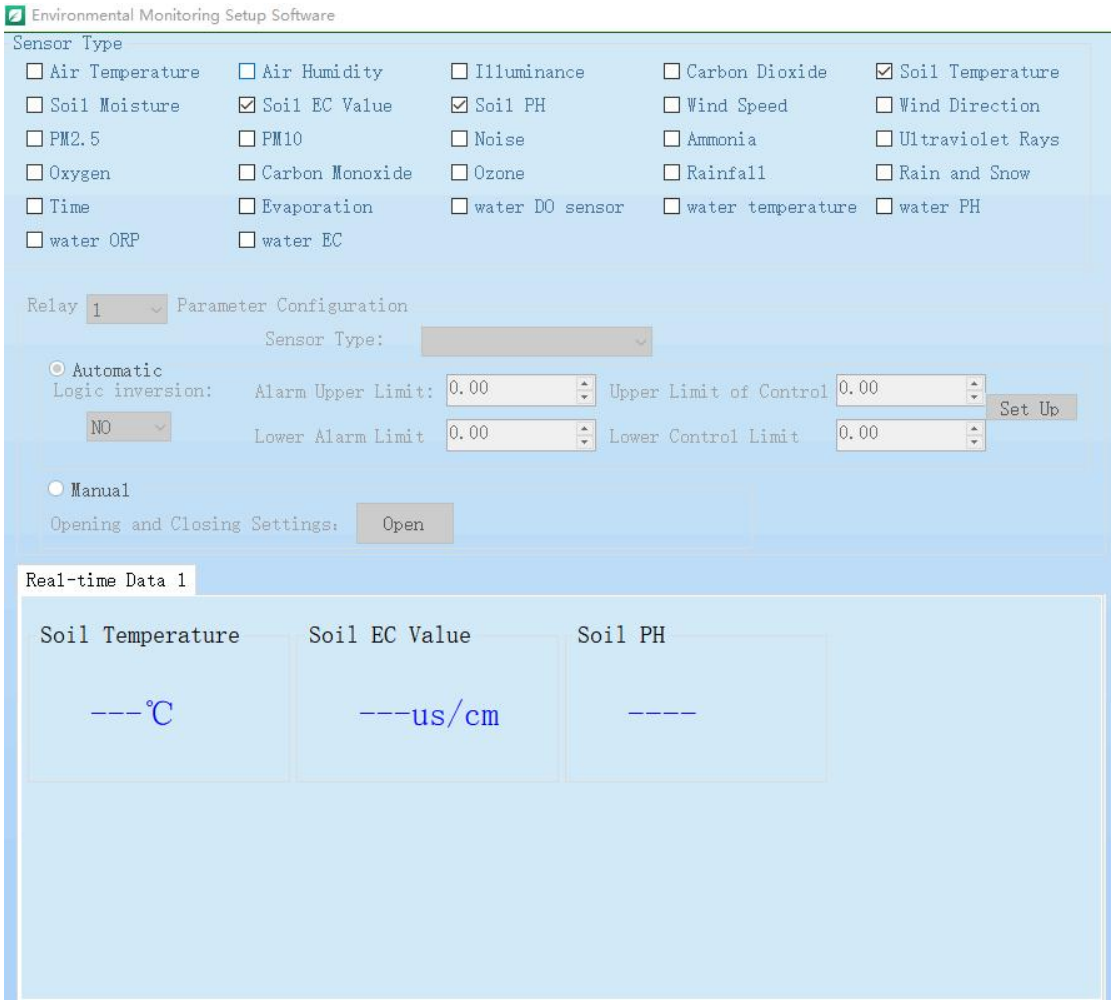

Environmental Monitoring Setup Software
Sensor Type
Air Temperature
Air Humidity
Illuminance
Carbon Dioxide
Soil Temperature
Soil Moisture
Soil EC Value
Soil PH
Wind Speed
Wind Direction
PM2.5
PM10
Noise
Ammonia
Ultraviolet Rays
Oxygen
Carbon Monoxide
Ozone
Rainfall
Rain and Snow
Time
Evaporation
water DO sensor
water temperature
water PH
water ORP
water EC
Relay 1
Parameter Configuration
Sensor Type:
Automatic
Logic inversion:
NO
Alarm Upper Limit:
0.00
Upper Limit of Control
0.00
Set Up
Lower Alarm Limit
0.00
Lower Control Limit
0.00
Manual
Opening and Closing Settings:
Open
RS485
RJ45
System Configuration
Serial Port:
Connect Device
Baud Rate:
9600
Access to information
Device Address:
Read Data
Current address
Read Interval (s):
2
Collection Settings
Set Interval(min):
1
Set Up
Communication Settings
Set Device Address:
Set Up
Real-time Data 1
Clear

2）RS485：

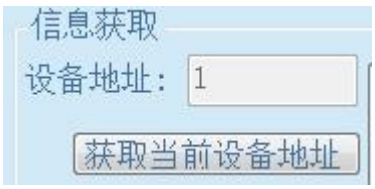


Select serial port number and baud rate (9600 by default, don’t selected),

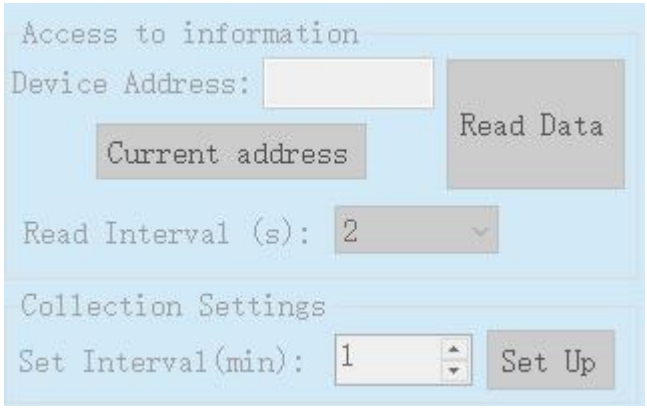
After the device is connected, the device address in [information acquisition] is loaded; In [sensor type selection], the function set in the current panel is checked by default; The checked function list is displayed in [real time data]. As shown in the figure:



If the current device address is changed or empty, you can manually click the [get current device address] button to get the latest device address.

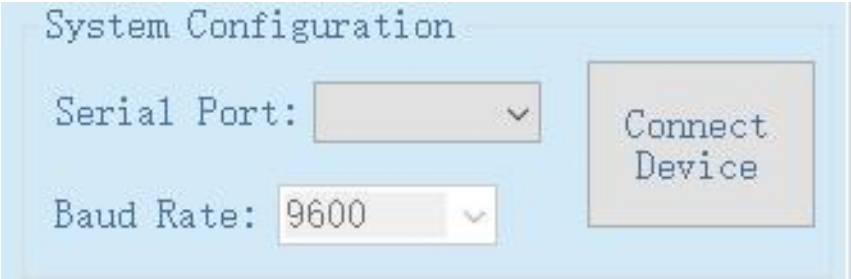


（4）To modify the device address: select [communication settings], fill in the address to be modified in [set device address], and click [settings] to complete the modification.



After the modification is completed, you will be prompted that the modification is successful.

（ **5** ） To modify the baud rate of the equipment: select [communication setting], select the baud rate to be modified in [serial port setting] - [baud rate], and click [setting] to complete the modification.



After the modification is completed, you will be prompted that the modification is successful

Chapter VII Fault analysis and quality assurance

7.1 Fault Analysis

NUM	Performance	Possible Faults	Solution
1	No communication signal	Cable fault	Check the power supply circuit with a multimeter
2	No Data	Interface connection failure	Interface connection failure
3	Wrong Data	Probe Wrong	Contact Us