



Product introduction

With the deterioration of urban air pollution, urban management departments will choose to deploy air environment monitoring terminals to realize grid management and online monitoring in order to collect air quality data in various regions in real time.

An intelligent "four gas and two dust" (SO₂, NO₂, CO, O₃, PM_{2.5}, PM₁₀) sensor is launched for air quality monitoring. This sensor is a new type of intelligent sensor specially launched by our company for gas detection. In the detection method, the gas in the detected area in the instrument enters the gas sensor with the free flow of air. The sensor mainly solves the problems of various types of gas detection, incompatibility of various types of sensors, complex production calibration, and restrictions on replacement of core components

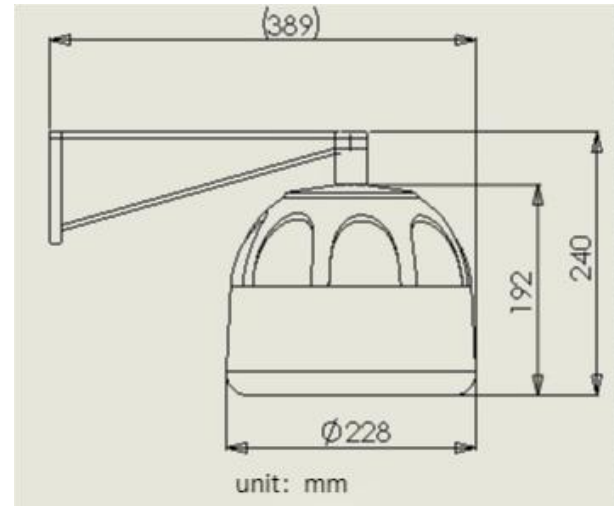
Features

- Using imported four-electrode gas sensor with stable performance and high resolution;
- Monitor NO₂, CO, SO₂, O₃ gas, optional PM_{2.5}, PM₁₀ dust parameters;
- Modular product design, convenient for later maintenance;

This product is suitable for monitoring in enterprise parks, municipal environment monitoring, mobile environment monitoring, traffic pollution

environment monitoring, residential area or park environment monitoring and other fields.

Dimensions



Technical Parameters

Power	DC 12V
Output	RS485 (MODBUS)
Gas extraction method	Diffusion
IP rate	IP65
Installation method	Pole fixed installation

Gas sensor technical parameters

The gas sensor uses the principle of electrochemistry to monitor the atmospheric concentration, and adopts a four-electrode gas sensor imported from abroad. The four-electrode sensor has an additional auxiliary electrode to compensate for the zero-point current, so that it has better response time and anti-interference characteristics.

Principle	Electrochemistry
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Range/Resolution	CO: Range 10ppm, Resolution 0.001 ppm SO2: Range 5ppm, Resolution 0.001 ppm NO2: Range 5ppm, Resolution 0.001 ppm O3: Range 5ppm, Resolution 0.001 ppm
Accuracy	±5%FS
working environment	-30-50℃, 15~90%RH

PM2.5、PM10 Technical Parameters

Dust monitoring uses laser light scattering to measure particle concentrations. When the particles pass through the photosensitive area formed by the focused laser, the light scattered by the particles is collected by the micro photodetector on the detection window, and the detector converts the received light intensity signal into a voltage signal, and the intensity of the signal corresponds to the unit of the particle concentration value and the dust concentration value are output in real time through the data interface after coefficient conversion.

Principle	Principle of Laser Scattering
Monitor particle size	PM2.5、PM10
Concentration range	PM2.5: 0-1000ug/m3 PM10: 0-2000ug/ m3
Resolution	1ug/m3
Consistency	<±10%

Installation method

Select a suitable installation location, the

gas sensor is installed in an open field, where the air circulation is good, and the pole is fixedly installed.

MODBUS-RTU Communication

protocol

I Serial port format

Data bits: 8 bits

Check Digit: None

Baud rate: 9600.

II Communication format

【1】 Read sensor address

Send: 00 20 CRC

Return: 00 20 Address CRC

Description: Address is 1 byte, the range is 0-255

For example: send 00 20 00 68

Return 00 20 01 A9 C0

【2】 Write the sensor address

Send: 00 10 Address CRC

Return: 00 10 CRC

Description: Address is 1 byte, the range is 0-255.

For example: send 00 10 01 BD C0

return 00 10 00 7C

【3】 Read real-time sensor data

For example send: 01 03 00 00 00 06 C5 C8

No.	meaning	offset	Byte count	Description
1	Device address	0	1	Device Unique Address
2	opcode (read))	1	1	Fixed value 0x03
3	Register start number	2	2	The first register number read
4	Read the number of registers	4	2	The number of sensor parameters
5	CRC16 Check	6	2	low front high back

Return: 01 03 0C 00 32 00 21 02 08 00 12 00
1E 00 2D CRC

No.	meaning	offset	Byte count	Description
1	Address field	0	1	Address(0x01)
2	Opcode	1	1	Read only(0x03)
3	Data length field	2	1	Data length
4	Data field	3	2	SO2 (ppm)
		5	2	NO2 (ppm)
		7	2	CO (ppm)
		9	2	O3 (ppm)
		11	2	PM2.5 (ug/m3)
		13	2	PM10 (ug/m3)
5	Check field	15	2	low front high back

Steps to calculate CRC code:

1. The preset 16-bit register is hexadecimal FFFF (that is, all 1s). Call this register the CRC register;
2. XOR the first 8-bit data with the lower bits of the 16-bit CRC register, and place the result in the CRC register;
3. Shift the contents of the register one bit to the right (toward the lower bit), fill the highest bit with 0, and check the lowest bit;
4. If the lowest bit is 0: repeat step 3 (shift again)
If the lowest bit is 1: XOR the CRC register with the polynomial A001 (1010 0000 0000 0001);
5. Repeat steps 3 and 4 until the right shift is performed 8 times, so that the entire 8-bit data is processed;
6. Repeat steps 2 to 5 to process the next 8-bit data;
7. The final CRC register is the CRC code;
8. When the CRC result is put into the information frame, the high and low bits are exchanged, and the low bits are first.

Notice

1. Please check whether the packaging is in good condition, and check whether the product model is consistent with the selection;
2. Do not connect with live power. After the wiring is completed and checked, the power can be turned on;
3. The length of the sensor line will affect the output signal of the product. Do not arbitrarily change the components or wires that have been soldered when the product leaves the factory. If you need to change it, please contact the manufacturer;
4. The sensor is a precision device, please do not disassemble it by yourself, or touch the surface of the sensor with sharp objects or corrosive liquid, so as not to damage the product;
5. Please keep the verification certificate and qualification certificate, and return it together with the product during maintenance.

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