Laser PM2.5 Sensor specification

Product model: SDS021
Version: V1.0

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Contents

Overview

The SDS021 using principle of laser scattering,can get the particle concentration between 0.3 to 10μm in the air. It with digital output and built-in fan is stable and reliable.Product has passed the CE, FCC and RoHS certification.

Characteristics

1. Accurate and Reliable: laser detection, stable, good consistency;

2. Quick response: response time is less than 10 seconds when the scene changes;

3. Easy integration: UART output (or IO output can be customized), fan built-in;

4. High resolution: resolution of 0.3μg/m^3;

5.Certification:CE,FCC,RoHS;

6.Cutter: professional internal spiral duct, cutting the small particles effectively;make the measurement more accurate;

7.Flocculant prevention design:with inlet which can calculate the space of the fence specially,effectively prevent the catkin floc etc;

8.Clean hole:independent design,convenient maintenance;

9.Smallest:the minimum volume of laser PM2.5 sensor.

Scope of application

Detector of PM2.5;Purifier;Fresh air system and other detection field.

Working principle

Using laser scattering principle:

Light scattering can be induced when particles go through the detecting area. The scattered light is transformed into electrical signals and these signals will be amplified and processed. The number and diameter of particles can be obtained by analysis because the signal waveform has certain relations with the particles diameter.

Technical Parameters

No	Item	Parameter	Note
1	Measurement parameters	PM2.5,PM10	
2	Range	0.0-999.9 μg /m^3	
3	Rated voltage	5V	
4	Rated current	60mA±10mA	
5	Sleep current	<4 mA	Lase&Fan sleep
6	Temperature range	Storage environment：-20 ~ +60℃	
		Work environment：-10 ~ +50℃	
7	Humidity range	Storage environment：Max 90%	
		Work environment：Max 70%	
8	Air pressure	86KPa~110KPa	
9	Corresponding time	1s	
10	Serial data output frequency	1Hz	
11	Minimum resolution of partical	<0.3 μm	
12	Counting yield	70%@0.3μm 98%@0.5μm	

13	Relative error	Maximum of ±15% and ±10μg/m^3	25℃, 50%RH
14	Product size	42.5x32x24.5mm	
15	Certification	CE/FCC/RoHS	

Power requirement

Power Voltage：4.7~5.3V

Power supply：>1W

Supply voltage ripple：<20mV

About service life

Service life is the key parameter of laser dust sensor. The laser diode in this sensor has high quality and its service life is up to 8000 hours. If you need real-time data (such as detector), you can use the default configuration that measures at the frequency of 1time per second. On the occasion of real-time demand is not high (such as filter, air quality monitoring, etc.), you can use the discontinuous working method to prolong the service life. For example, you can start the sensor for 30 seconds per minutes. If you have any other requirements, please contact us, we are willing to serve for manufacturers and developers.

Product specifications

1.Product size

L*W*H=42.5*32*24.5mm

2.Interface specification

No	Name	Comment
1	5V	5V Input
2	NC	Not Connect
3	GND	Ground
4	R	RX of UART（TTL）@3.3V
5	T	TX of UART（TTL）@3.3V

The UART communication protocol

Bit rate ： 9600

Data bit ： 8

Parity bit： NO

Stop bit ： 1

Data Packet frequency: 1Hz

The number of bytes	Name	Content
0	Message header	AA
1	Commander No.	C0
2	DATA 1	PM2.5 Low byte
3	DATA 2	PM2.5 High byte
4	DATA 3	PM10 Low byte
5	DATA 4	PM10 High byte
6	DATA 5	ID byte 1

7	DATA 6	ID byte 2
8	Check-sum	Check-sum
9	Message tail	AB

Check-sum: Check-sum=DATA1+DATA2+...+DATA6 。

PM2.5 value: PM2.5 (μg /m^3) = ((PM2.5 High byte *256) + PM2.5 low byte)/10

PM10 value: PM10 (μg /m^3) = ((PM10 high byte*256) + PM10 low byte)/10

Extended functionality

1.Manual hibernation(Sleep and wake up)

2.Timed hibernate(Cycle to work)

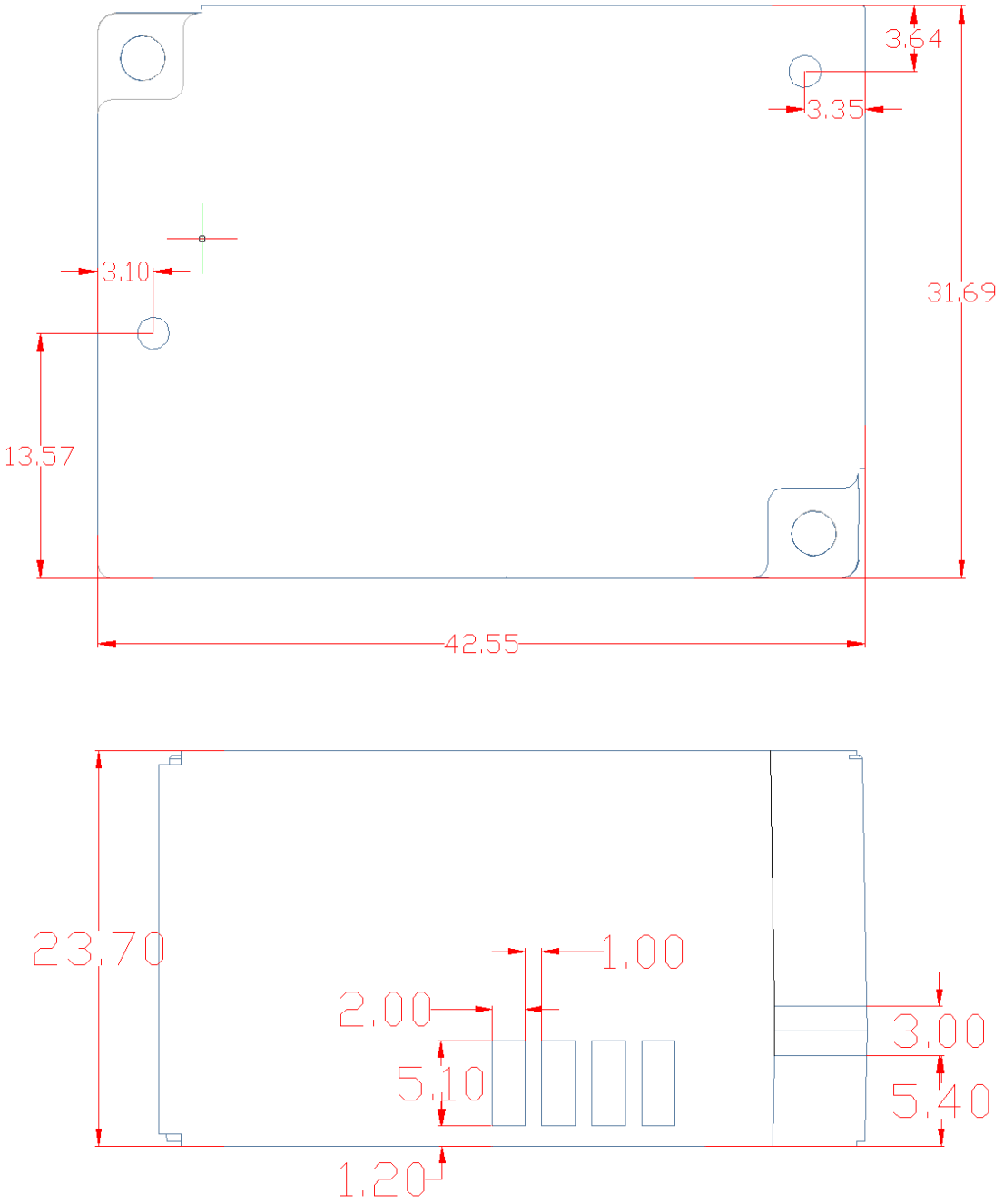
3.User ID setting

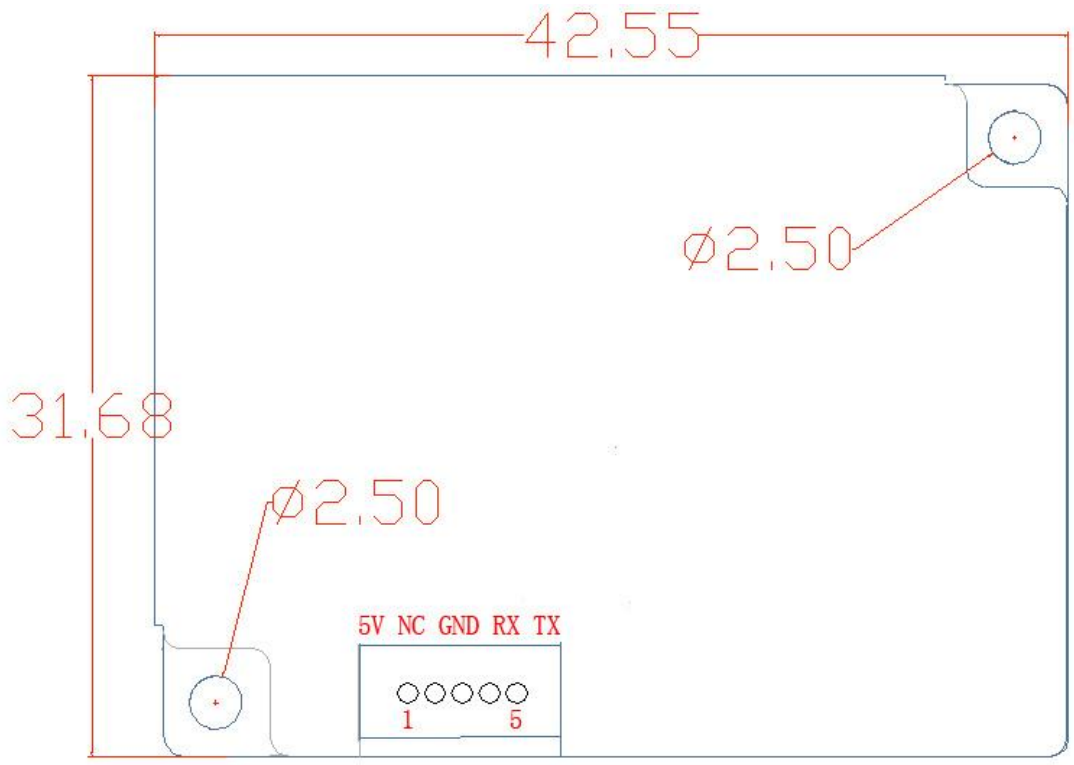
4.Set data reporting mode(Active report and query report)

5.Version number query

If you have any other requirements, please contact us.

Installation size





Matters needing attention

1、In the context of the sensor power supply;

2、Do not press the sensor fan site;

3、Note the process design to ensure smoothness and stability of sensor airflow;

4、Please ensure that the sensor to work under normal conditions of temperature and humidity;

5、Avoid severe vibration during transport, so as not to affect the accuracy of detection and accuracy;

6、Follow this specification is the correct sensor installation.