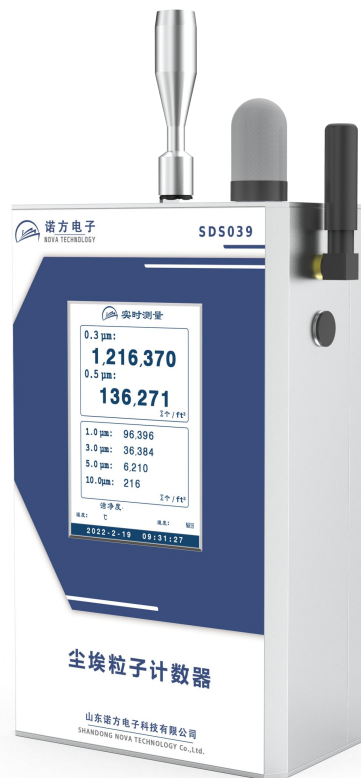


Particle Count Sensor Specifications

Product model: SDS039-FS
Version: V1.2



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Overview

SDS039 is a multi-channel particle counting sensor based on the principle of laser scattering, which can accurately measure the particle number concentration of 6 types of particle sizes including $0.3\mu\text{m}$, $0.5\mu\text{m}$, $1\mu\text{m}$, $3\mu\text{m}$, $5\mu\text{m}$, and $10\mu\text{m}$. Through the standard RS485 interface and Modbus-RTU protocol, the data is transmitted to various intelligent terminals in real time, reducing human participation and realizing unmanned intelligent monitoring. In a variety of dust-free occasions, continuous real-time monitoring can be realized 7*24 hours, reducing risks and costs.

SDS039 has higher measurement accuracy and particle size resolution, and has a stronger ability to resist the influence of humidity. The SDS039 particle counting sensor uses industrial-grade lasers and photosensitive components, combined with the latest generation of light-scattering particle monitoring technology, carefully adjusted optical and gas path structures, and a new generation of high-frequency weak signal processing circuits and high-precision particle identification algorithms, more accurate It can measure the concentration of various environmental particles with cleanliness requirements.

Features

- Accurate data: single-particle laser scattering principle, industrial-grade laser light source. High counting efficiency, good repeatability and consistency.
- Particle size range: The particle size range is 0.3~10 μm , while ensuring the counting efficiency, a single sensor covers six channels.
- High reliability: aerodynamic correction , self-inspection of optical path and air path, insensitive to vibration, ensuring system reliability and stability.
- Stable flow rate: Active sampling method, constant flow intake fan, optional PID flow control function, can support stable, long-term, high negative pressure, sampling; optional air pump version, built-in independent high-performance air pump.
- Fast response: second-level data update.
- Communication interface: RS485 and UART TTL serial output; optional 4G , Ethernet
- Fully automatic measurement: remote control, wireless transmission, real-time data upload to the Internet of Things platform.
- Circuit safety: with ESD , overvoltage, overcurrent, reverse

connection protection to ensure the stability and reliability of the circuit.

- Convenient installation: simple installation structure and high versatility.
- Safe and friendly: low-voltage power supply, no electric shock; no radioactive source, no light pollution.
- Sampling flow rate: standard 2.83L/min , two sampling methods of air pump / fan are optional.

Scope of application

Pharmaceutical industry , electronics industry , food processing industry , finishing clean room, etc.

Working principle

Using the principle of single-particle laser scattering, through precise optical design and air path designed according to the principles of fluid mechanics, the particles in the sampled air pass through the beam with a high probability to generate weak scattered light; through the precise optical signal collection device, the scattered light is collected and projected onto a highly sensitive, high bandwidth photodetector. By identifying and analyzing the scattered pulse of each particle, the corresponding signal intensity of each particle is obtained;

through the calibration procedure, the particle size of each particle is obtained; after conversion and aerodynamic calibration, the number of particles is obtained.

Technical Indicators

No.	Project	Parameter	Remark
1	Measurement output	0.3~10 μ m total 6 channels particle number	0.3 μ m , 0.5 μ m , 1 μ m , 3 μ m , 5 μ m , 10 μ m
2	Range	4,000,000pcs / ft ³	When meeting the loss of 10%
3	Input voltage	DC12V [9~25VDC]	The recommended power supply is not less than 12V 2A
4	Rated power	3.5W	
5	Sleep power	0.24W	
6	Range of working temperature	-20-60 °C	
7	Humidity range	0-99%RH	
8	Working atmospheric pressure	86KPa~110KPa	
9	Response time	1S	

10	Communication Interface	RS-485 + UART TTL	customizable
11	Protocol	Modbus-RTU	customizable
12	Counting efficiency	0.3 μm /50% >0.45 μm /100% (according to ISO21501)	@25 °C ,50%RH
13	Relative error	$\pm 10\%$	@25 °C ,50%RH
14	Product Size	173*104*63.2mm	Isokinetic sampling head not included
15	Hose size	Inner diameter: ϕ 5mm Outer diameter: ϕ 8mm	
16	Life	3 years	below 40 °C

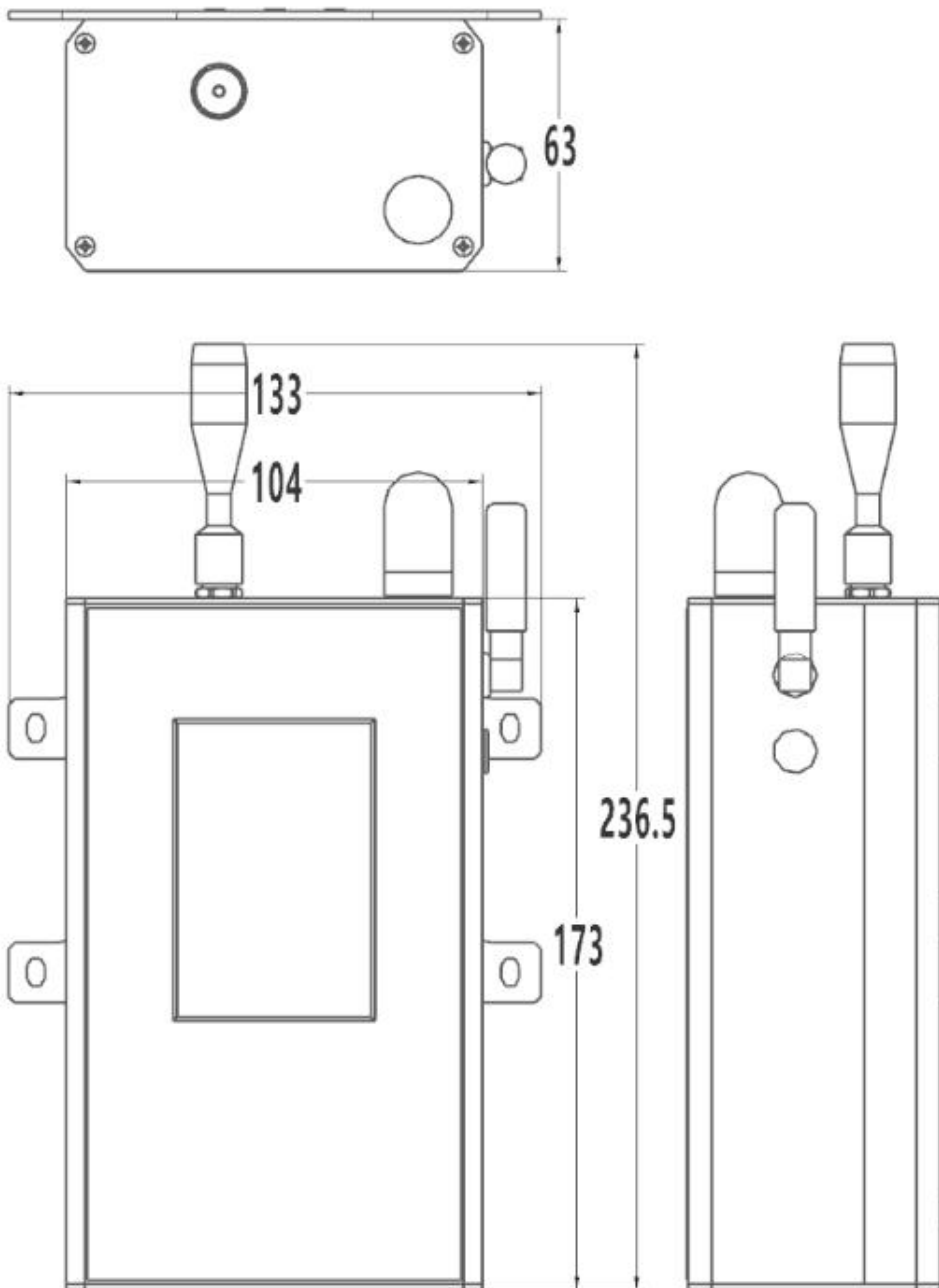
Interface Description

PIN	Name	Remark
1	A+	A+ of 485 communication , 485 standard level
2	B-	485 communication B-, 485 standard level
3	Tx	TTL serial port sends TX , level 5VDC
4	Rx	TTL serial port receives RX , level 5VDC
5	12V	DC 12V working voltage (input range 9-25VDC)

6	5V	DC 5V power supply (only for sensor parameter setting)
7	GND	equipment
8	GND	equipment

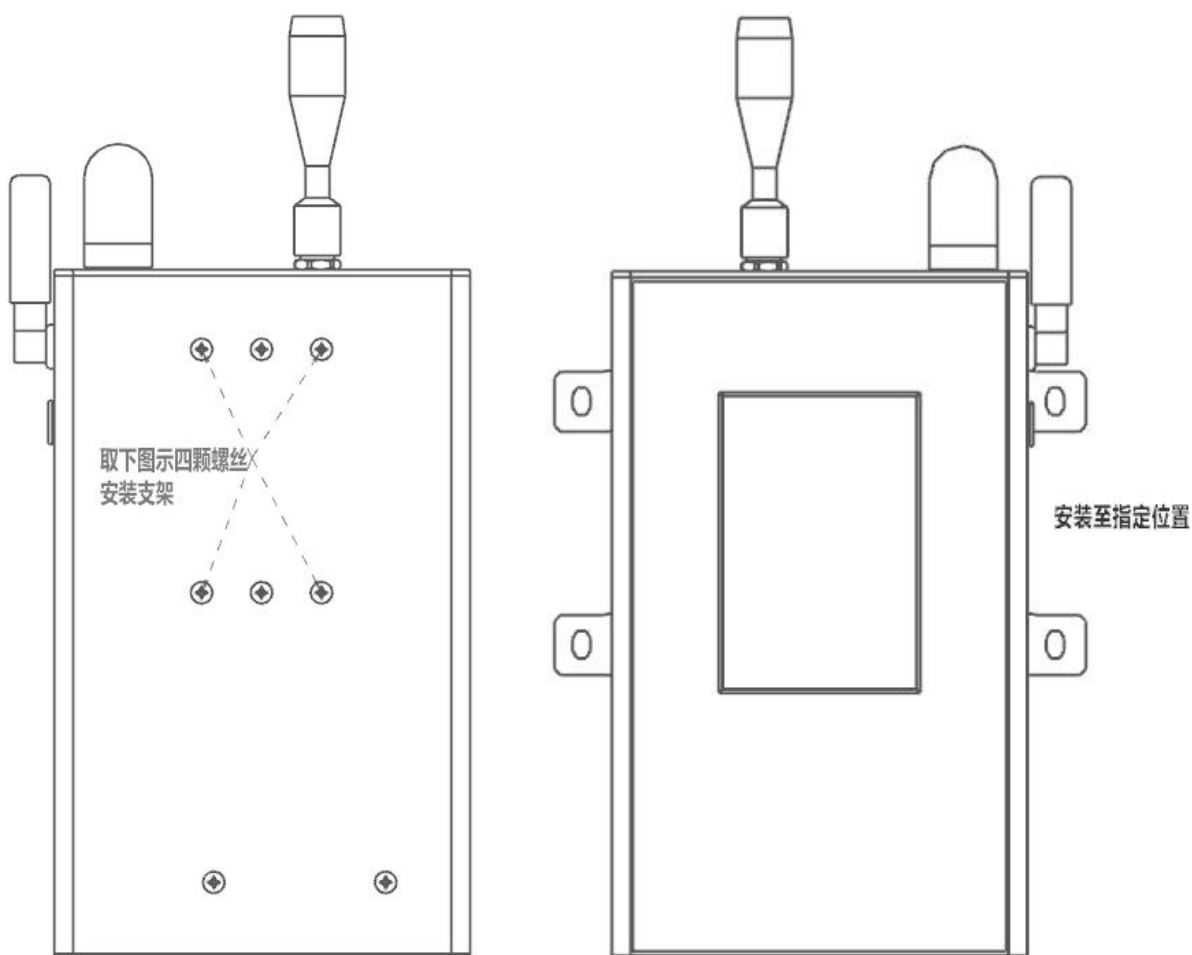
Product specification

(unit: MM)



Guidance on the optimal installation method of equipment

In general atmospheric environment, the optimal installation method of the equipment is shown in the figure below



Detailed list of equipment and accessories

NO.	Name	Quantity	Remark
1	the host	1	
2	Mounting brackets	2	
3	Isokinetic sampling head	1	
4	Product specification, communication protocol	1	
5	data line	1	Available only for sample purchase
6	TTL to USB module	1	Available only for sample purchase

Equipment scrapped

Waste electrical and electronic products should meet the national requirements for comprehensive utilization of resources, environmental protection, labor safety, and protection of human health. It is recommended that they be handed over to processors with qualifications for recycling electrical and electronic products.



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