Light Scattering Dust Sensor Module

AI Overview

Light scattering dust sensor modules detect airborne particulate matter by measuring the scattering of light caused by dust particles, providing real-time air quality data for industrial and IoT applications.

Working Principle

Light scattering dust sensors operate on the optical scattering principle, where a light source, typically a laser or LED, illuminates airborne particles. The scattered light is detected by a photodiode or photodetector, and the intensity of the scattered light is proportional to the particle concentration in the air. Some sensors, like the L-com SRAQ-D681-B, use Mie scattering to detect particles ranging from 0.3 to 10 µm in diameter, allowing precise measurement of PM2.5 and PM10 levels . Industrial sensors, such as the DUSTHUNTER SP100, use forward light scattering for accurate monitoring in ducts and industrial environments .

Key Components

• Light Source: Laser diode or LED to illuminate particles.
• Photodetector: Measures scattered light intensity.
• Microcontroller: Processes signals and calculates particle concentration.
• Amplifier and Signal Conditioning: Enhances signal quality.
• Optional Fan or Suction System: Ensures consistent airflow through the sensing chamber .

Applications...

Article Content

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PM3006s Outdoor Laser Particulate Gas Sensor – CO2 Meter

PM3006s Outdoor Air Quality High Performance PM Gas Sensor is designed as a linear light source-based module with laser

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SDS011 (Laser Dust/Air Quality Sensor Module)

Sensor uses laser light scattering principle to measure value of dust particles suspended in the air. Sensor provides high precision

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PMS7003 Sensor Module PM2.5 Air, Particle Dust Sensor

The sensor uses the principle of laser scattering. It means that the laser light on the particles in the air and making the scattering,

Feb 28, 2026

Light Scatter

Light Scatter Sensors can be used with the following control unit options. Multi-Channel Control Unit The Multicontroller allows

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Nexisense ZH07 Laser Dust Sensor

The Nexisense ZH07 laser dust sensor is a solution developed precisely for these core needs. It is based on mature

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Arduino GP2Y1014AU0F Dust Sensor Tutorial

Arduino GP2Y1014AU0F Dust Sensor Circuit Connection Diagram Now that we have a complete understanding of

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Microsoft Word

The monitor can be used as an independent equipment and also a combination of a variety of sensors through the serial port to

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Cubic PM3003Q Laser-Based Dust Sensor Module

The Cubic PM3003Q is a compact, OEM-grade laser scattering dust sensor module engineered for

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Laboratory calibration of a light scattering soiling sensor

In this study, laboratory calibration of a commercial soiling sensor was carried out using Doha dust and the Arizona

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Digital & optical dust particle sensor

The sensor digitally optically measures the dust particles per m3. Integration via SNMP, MODBUS TCP,

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Enhancing Dust Concentration Monitoring in High ...

Enhancing Dust Concentration Monitoring in High Particulate Matter Environments: A Dual-Light Source Particulate

Nov 20, 2025

Anti-dust Laser Particle Sensor for Ambient Weather Air Quality

PM2009L with anti-dust structure laser particle sensor module is based on laser scattering technology tecting particle

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Light Scattering Real Time Dust Density Monitor System

Its dust detection area is 3 dimensional and large; it covers large area inside of a stack and the detector has an excellent sensitivity.

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Dust Mass Concentration Detection Using Multi-angle Light Scattering ...

To reduce detection error, a real-time humidity correction dust mass concentration detection technology is proposed. Analyze Mie

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Miniature particulate matter counter and analyzer based on lens-free ...

The fabrication of such retina features an unconventional design of a CMOS image sensor and a specific drilling post

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Light Scattering Infrared Dust Sensor Market 2026

COMPETITIVE LANDSCAPE Key Industry Players Light Scattering Infrared Dust Sensor Market Leaders and Challengers Light

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Dust and Particulate Sensor Module With Display, 5

This sensor module uses the principle of laser light scattering (MIE scattering) to

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DUSTHUNTER SP100

The DUSTHUNTER SP100 is a type-ap-proved measuring device with probe for very low to medium dust concentrations. Installation

Oct 25, 2025

Dust Mass Concentration Measurement Based on Light Scattering

Total dust measurements indicate concentrations that can enter the nose and mouth of a worker as well as that which can settle on

Dec 19, 2025

DUSTHUNTER SP30 particle measuring device for filter

The DUSTHUNTER SP30 is a highly efficient dust measurement device designed

Jul 04, 2026

DUSTHUNTER SP100 dust measuring for low to medium

The DUSTHUNTER SP100 is a highly accurate dust monitor designed for low to medium dust concentrations. Using forward light

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A Systematic, Cross-Model Evaluation of Ensemble Light Scattering Sensors

The light scattering particulate matter sensor manufactured by Sharp Inc. (GP2Y1010AU0F) has been evaluated and

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LED array-based multi-angle light scattering for aspirating smoke ...

Multi-angle light scattering with an LED array instead of angle-positioned PDs was measured, and the unique optical

Apr 28, 2026

Particle, Dust Sensors | Sensors, Transducers | DigiKey

Particle, Dust Sensors Products in the dust sensor family are modular devices used to measure the

Sep 14, 2025

Design of air quality monitoring system based on light scattering sensor

In this paper, a data service air quality detection system based on light scattering sensor is proposed, which can

May 01, 2026

Light Scattering Technology Schematic Diagram

Particles in the air have ascattering effect on incident light, and the intensity of the scattered lightis related to the particle size. Inhale

Dec 19, 2025

Particulate Matter (PM) Sensors Of Two Different

The particulate matter sensors, with other names of particles sensors, PM2.5 PM10 sensors, dust sensors

Jan 31, 2026

OPSIS blog – Optical Methods for Particulate Monitoring

This may be of interest at for example airports. Light-scattering Methods Light-scattering-based monitors utilize the

Jan 26, 2026

Particulate Matter (PM) sensor Module

The PM sensor module is designed to measure particulate matter PM concentrations in the

Sep 27, 2025

Multi-in-one Air Quality Sensor Module FS00905

Multi-in-one Air Quality Sensor Module FS00905 Introduction The dust sensor is based on the principle of

May 07, 2026

Understanding Laser Dust Sensor Modules for Air Quality Monitoring

Laser dust sensor modules utilize light scattering technology to accurately measure PM1.0, PM2.5, and PM10 levels for air quality

Jun 24, 2026

Dust measurement using optical technology | Fuji Electric

ZFDM-4 flue gas dust analyser robust, reliable backscatter dust analysers for demanding industrial installations. QAL1-certified

Jan 25, 2026

Anti-dust Laser Particle Sensor for Ambient Weather Air Quality

Anti-dust Laser Particle Sensor PM2009L PM2009L with anti-dust structure laser particle sensor module is based on laser scattering

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A study on the development of a light scattering particulate matter ...

In addition, additional studies were conducted to analyze and correct the collected big data to overcome the problem of

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Working principle of laser particulate sensor. After the laser ...

Working principle of laser particulate sensor. After the laser scattering through the particles, the pulse signal outputted by the sensor

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Optical dust analyser

Features In line with regulatory developments, we now offer you our Fuji ZFDM-4 dust analyser . This device retains its ease of

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Understanding Laser Dust Sensor Modules: Principles, Applications,

At its core, a laser dust sensor operates on the principle of light scattering, specifically Mie scattering. The module

Nov 27, 2025

Dust Laser Sensor Module: The Ultimate Guide to Air Quality

Explore the complete guide to dust laser sensor modules, covering their laser scattering working principle, key applications in air

Oct 18, 2025

Infrared Dust Sensor Module for PM2.5/VOC

Dust sensor module integrates infrared detection technology and uses the particle counting principle to detect PM2.5 in the

Contact Us

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