

# Laser Dust Sensor

## DL0001



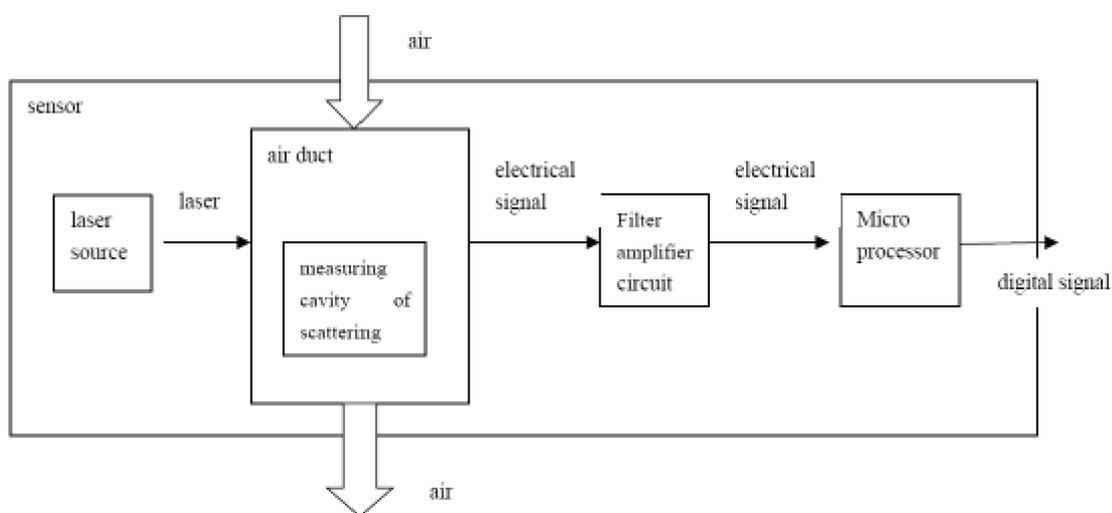
- Lensless design to ensure good consistency
- High accuracy measurement
- Can detect particles as small as 0.3 $\mu$ m in diameter

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## ■ Introduction

The Laser Dust Sensor is used to measure the concentration of suspended particles in the air with different sizes (including PM2.5). It uses a laser diode as the light source to illuminate the sampling air boosted by the blower. When the small particles in the air enter the illuminated area, the laser beam is scattered. The scattered light is received by a photodetector and converted into current signal which is amplified and processed then to indicate the concentration of particles. A built-in microprocessor converts it into mass concentration ( $\mu\text{g}/\text{m}^3$ ) and outputs the signal via universal digital interface.



Product Function Block Diagram

## ■ Applications

- Ventilation system
- Air purifier
- Air quality monitor
- Automotive air purification
- Air conditioner
- Other home appliances

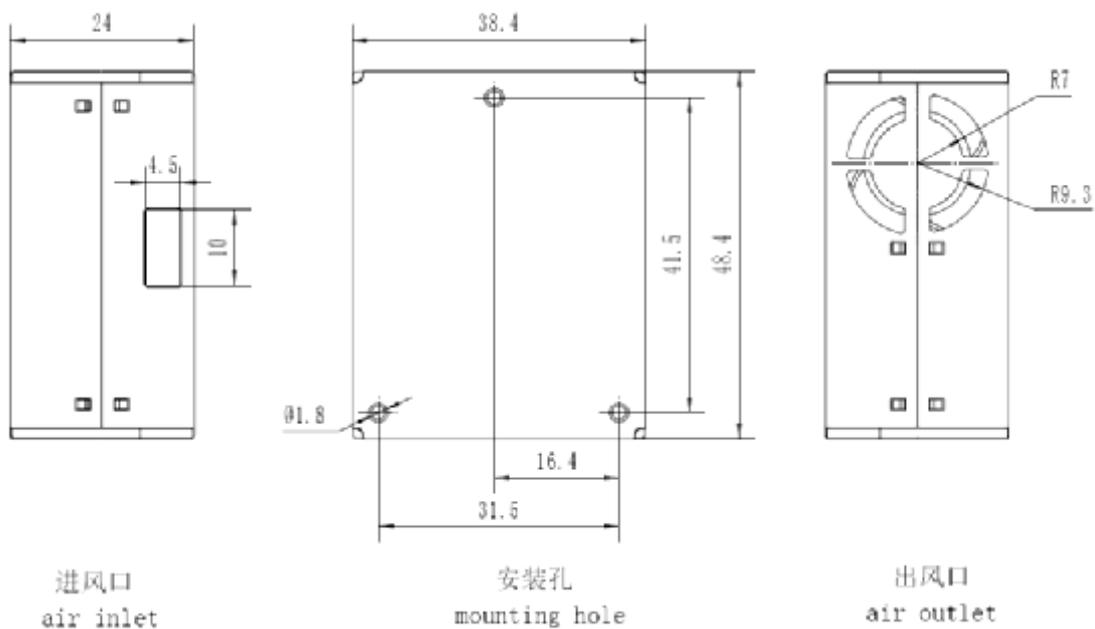


激光粉尘传感器 DL0001

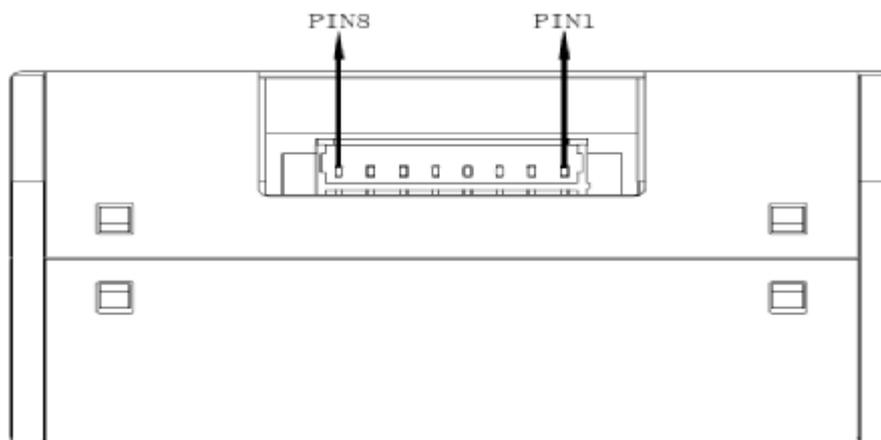
■ Technical Parameters

Item	Index	Unit
Measuring range of particles	0.3~1.0; 1.0~2.5; 2.5~10	μm
Effective range of particle mass concentration	0~500	μg/m <sup>3</sup>
Maximum range of particle mass concentration	999	μg/m <sup>3</sup>
Resolution	1	μg/m <sup>3</sup>
Consistency (PM2.5 standard value)	± 10 % @ 100 ~ 500 μg/m <sup>3</sup> ± 10 μg/m <sup>3</sup> @ 0 ~ 100 μg/m <sup>3</sup>	
Single measurement response time	1	s
Total response time	≤10	s
DC power supply voltage	5.0	V
Working current	≤100	mA
Data interface level	L <0.8 @3.3    H >2.7@3.3	V
Working temperature range	-10~+50	°C
Working humidity range	35~85%	
Storage temperature range	-40~+80	°C
Mean time to failure	≥3 years	
Maximum size	50×40×25	mm

■ Appearance & Dimensions (Unit: mm)



■ Wiring Diagram



Pin No.	Function Symbol	Illustration
PIN1	VCC	Positive power supply
PIN2	GND	Negative power supply
PIN3	PWM	PWM output (customized)
PIN4	RXD	Serial port receive/TTL level@3.3V
PIN5	TXD	Serial port transmit/TTL level@3.3V
PIN6	NREST	Reset signal/TTL level@3.3V low to reset
PIN7	NC	No connection in normal use
PIN8	NC	No connection in normal use

## ■ Precautions

1. The metal case should be connected with the internal power ground. Be careful not to short it with other external board circuits or the cases of chassis.
2. The optimal installation method is to place the plane where the air intake and outlet are located close to the air vent which connects the inner wall of the machine and outside. If this condition can not be achieved, make sure there is no obstruction within 2cm around the air outlet. There should be a structure between the inlet and outlet to isolate the air flow in order to prevent the air flow from flowing back directly from the outlet to the inlet in the user machine.
3. The size of the vent opened in the inner wall of the user machine for the air inlet should not be smaller than the air inlet of the sensor .
4. When applying the sensor to air purifiers, avoid mounting it in the purifier's air duct directly. If this condition cannot be achieved, the sensor should be installed in a separate structure to be isolated from the air duct of the purifier.
5. When applying the sensor to purifiers and fixed test equipment, the sensor should be placed 20cm or higher above the ground, otherwise it may be polluted by the large dust particles and even floc near the ground. In this case, which may cause the fan to stop rotating.
6. When the sensor is applied in outdoor fixed equipment, the equipment itself should have the function of defending sandstorm, rain and snow weather and catkins.
7. Do not dismantle the sensor, including the metal shield shell, in case of irreversible damage.
8. The data tends to be stable 10s after the sensor is powered up. If an intermittent operation mode is used for longer working life or other purposes, in order to ensure the accuracy of data, the working duration is recommended to be longer than 10s.