■ Outline

The sensor detects “PM (particle matters) in the air” by optical method.

This sensor uses LD (laser diode) as light-emitting device and PD (photo diode) as light-receiving device.

The LD inside the sensor emits light to the air in a detection area. The PD inside the sensor detects scattering light which correlated to the actual floating particles in the air. A Microcomputer (MCU) inside the sensor analyzes the wave profile from PD by optimistic algorithm, then output a converted mass-density (μg/$m^3$) through $I^2C$ & UART interface.

■ Main Features

・Smaller size
・High accuracy (±10%, from low to high concentrations)
・High sensitivity & quick response
・Maintain performance by unique Auto Calibration Function
・Minimize dust accumulation by optimized air pathway structure and it makes possible to avoid “tracking” for electrical safety

■ Environmental Responsiveness

・This product complies with RoHS directive.

■ Usage Application

・To detect the floating particle in the air (PM2.5, PM10 & PM1, cigarette smoke, house dust, etc.)
Ex: air purifier, fan, and air conditioner

■ Dimensions

37 x 37 x 12 (thickness) [mm]

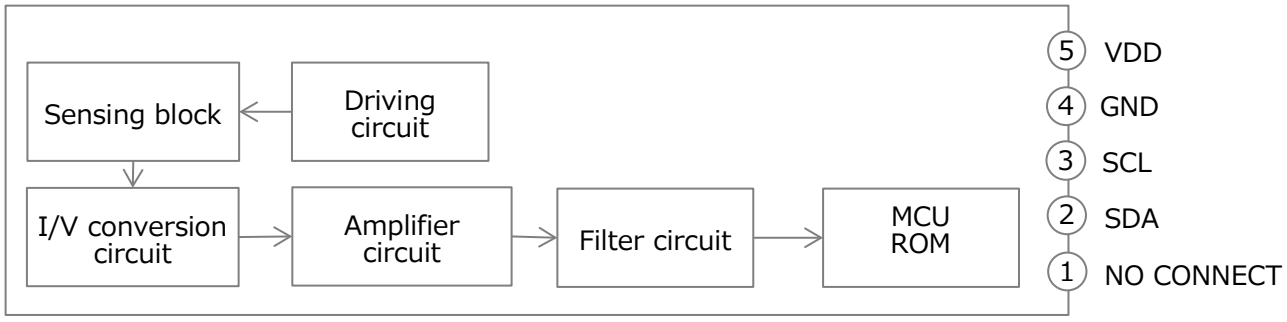
■ Weight

Approx. 13 [g]

■ Operating Characteristics

| Category | Characteristics | Note |
|---|---|---|
| Operating voltage | DC5V +/-10% | |
| Consumption current | Below 100mA | |
| Operating temperature | -10 ~ 60℃, under 95%RH | no dew condensation |
| Storage temperature | -40 ~ 70℃, under 95%RH | no dew condensation |
| Minimum detectable particle | 0.3μm | |
| Indicatable range: | 0μg/$m^3$ – 2,000μg/$m^3$ (UART)<br>0μg/$m^3$ – X,XXXμg/$m^3$ ($I^2C$) | |
| Maximum consistency error | ±10% | 35μg/$m^3$<、<1,000μg/$m^3$ |
| Response time | 1 sec | |
| Time to first reading | 8 sec | |
| Initial stability time | Approx. 28 sec after power on | 8 sec for initialization<br>20 sec for average processing |
| Output method | Digital signal output<br>・$I^2C$ & UART (TTL) | Refer to the<br>Communication Specifications |

■ Block Diagram




Connector : SM05B-GHS-TB(LF)(SN)（J.S.T. Mfg. Co., Ltd.）