

# DATA SHEET



## Sensor module for dust detection

### Description



### Characteristic features

- Light scattering detection method for measuring
- of particles with a diameter of 1  $\mu\text{m}$  and more
- Reliable detection of house dust and
- cigarette smoke
- Detection of the finest indoor allergens and
- triggers of asthma
- Long-term measurement sensitivity
- Compact dimensions, low weight
- Easy installation and maintenance
- Inexpensive

### Areas of application

- Air purifier
- Air analysis and monitoring equipment
- Air conditioners
- Fans and ventilation systems
- Smoke extractors
- Technology for allergy sufferers

### Technical data

STBM-271	
Measuring principle	Light scattering method
Measuring range	Particles < 1 $\mu\text{m}$ , 0...60.000 particles/1000cm <sup>3</sup>
Output signal	Pulse width modulation
Application temperature	-10 up to + 65 °C
Operating humidity range	< 95 % RH
Dimensions	(L x W x H) 59 x 45 x 20 mm
Connection	2 mm pitch connector
Stabilization time	One minute after power on
Power consumption	90 mA
Supply voltage	DC 5 V $\pm$ 10 %
Measuring medium	Ambient air, smoke, dust, cigarette smoke, pollen, pores and other allergenes.
Storage temperature	-20...80 °C
Weight	25 g
Article number	STBM-271

### Features

The STBM-271 is a sensor module for detecting dust, fine dust and pollen in the ambient air from a particle size of 1  $\mu\text{m}$ . Using light scattering detection techniques, the highly sensitive optical sensor detects the smallest particles such as dust, smoke, cigarette smoke, pollen or even house dust, spores and mite dust. The air is sucked in by the built-in radiator and irradiated with the infrared light of an LED.

A lens focuses the measuring point of the optical sensor. In relation to the particle concentration, the scattered light is converted into a pulse signal in the module. The connection is made via a 2mm plug connection.

With a size of (L x W x D) 59 x 45 x 20 mm and a weight of 25 g, the module is ideal for controlling air purifiers, fans and air conditioning systems, as well as for special device developments for allergy sufferers. In addition to cigarette smoke, the finest house dust particles and other indoor allergens can also be reliably detected. The sensor module for dust detection offers particular savings potential in the speed control of automatic ventilation systems. Room ventilation can be regulated proportionally on the basis of the measured air pollution. This significantly optimizes operating times. This advantage is also ideal for exhaust air systems in smoking areas or air conditioning systems.

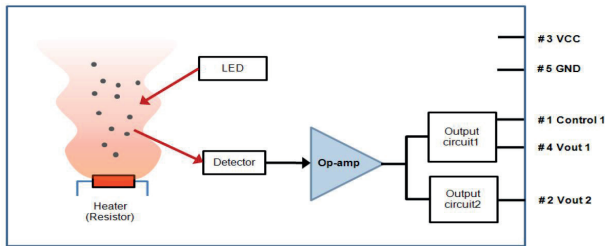
# DATA SHEET



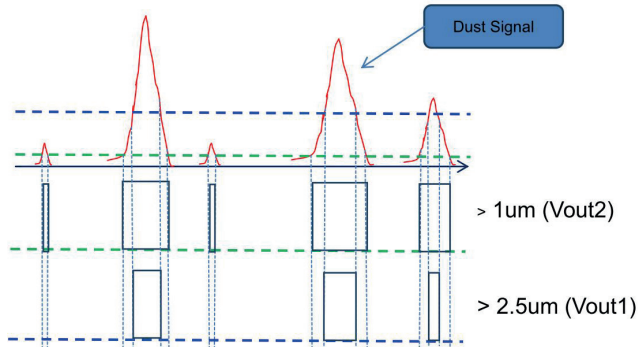
## Sensor module for dust detection

### Functional sketch

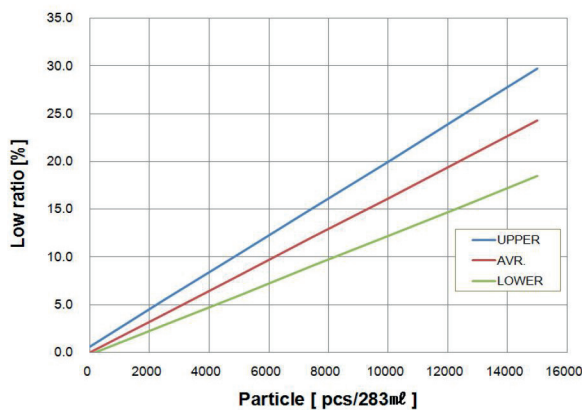
Measuring range	Density	Order Nr.
Particle > 1 µm	0 – 1.4 mg/m <sup>3</sup>	STBM-271



### Determination of the particle size

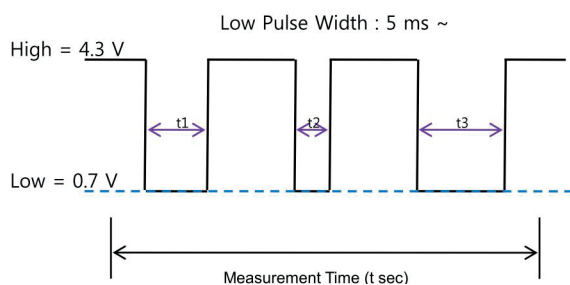


### Example characteristic curve of the sensor

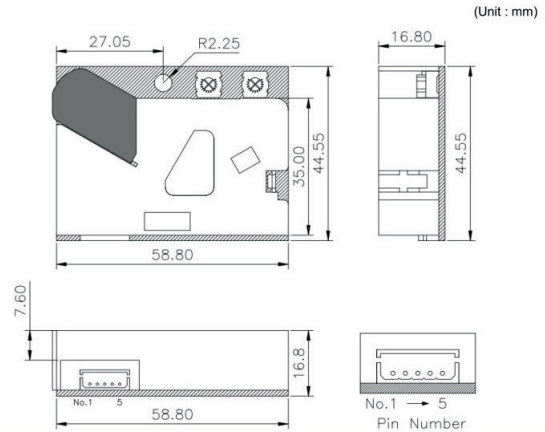


$$\times 1 \text{ ft}^3 = 28316.85 \text{ ml} = 0.02831685 \text{ m}^3$$

### Calculation Low Ratio



### Dimensions



### Pin assignment

Pin Nr.	Pin Name	Description
1	Control	Vout 1 control
2	vout 2	Vout 2 output (PWM)
3	Vcc	DC 5 V Input
4	Vout 1	Vout 1 output (PWM)
5	GND	Ground

### Output characteristic

Parameter	Sym-bol	Kondition	Min.	Typ.	Max.	Einheit
Vout 1, 2 at high <sup>1</sup>	Voh	No particle	4.0	4.3	-	V
Vout 1, 2 at low <sup>2</sup>	Vol	Particle	-	0.7	1.0	V
Time for stabilization <sup>3</sup>			1	-		Minute

<sup>1</sup>: Vout 1 and 2 are high if no particles were detected (Clean room).

<sup>2</sup>: Vout 1 and 2 are low when particles are detected.

<sup>3</sup>: After switching on

### Schematic diagram

