TELAIRE®

SMART Dust Sensor

SM-PWM-01C

SM-PWM-01C is a dust sensor that detects the dust particle concentration in air by using optical sensing method. An infrared light emitting diode (IR LED) and a photo-sensor are optically arranged in the device. The photo-sensor detects the reflected IR LED light by dust particles in air.

The SMART Dust Sensor can detect the small particles like cigarette smoke and it can distinguish small particles like smoke from large house dust by pulse pattern of signal output.

Applications

- Detection for dust in the air, Indoor Air quality monitoring
- Air cleaner, Air purifier, Air conditioner
- Outdoor dust monitoring with the IAQ monitor special mechanical design for customer
- Smoke type Fire alarm application by different sensor adjustments (customer option)

Features

- Compact size, light weight (about W59x H46x D18 mm, 20g)
- PWM (pulse width modulation) output (Low pulse output)
- Able to distinguish small particles of cigarette smoke from large particles of house dust
- The Low pulse width is proportion to particle size and concentration
- Constant forced air convection flow by heater resister in dust sensor
- Lead free and RoHS directive compliant
- Minimum particle size can be detected over 1 μm (House dust size: avg 20 μm, yellow dust size: avg 20um, cigarette dust size: avg 1 μm)

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SMART Dust Sensor Specifications

Electrical Characteristic

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	Vcc	-0.3 to+ 7.0	V
Operating temperature	Topr	-10 to 60	°C
Storage temperature	Tstg	-30 to 80	°C

Operating Supply Voltage and Signal Output (Ta=25 °C)

Parameter	Symbol	Rating	Unit
Supply voltage	Vcc	DC 5 ± 5%, Ripple <100mV	V
Current Consumption	Icc	<90 ± 10%	mA
Signal output	P1,P2	Negative Logic Pulse output	
Power up time *		90 *2	Sec

*1. Input impedance 200 kn, Pull-Up 10 kn, recommend 30 sec moving average of output signal

*2. To stabilize heater resister and air flow in dust sensor

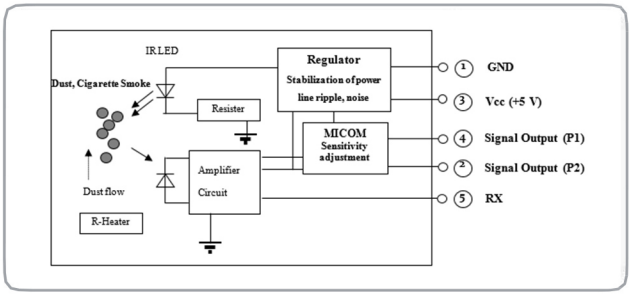
Recommend Operating Temperature/Humidity

Parameter	Rating	Unit
Operating Temp./ Humidity	-10°C ~ 45°C, < 85%RH *1	°C, %RH

*1. Dust sensor can detect the micro size water droplet, like fog and mist, as particles.

Do not use the dust sensor in high humidly environments as the humid air is under submicron size and the dust sensor cannot differentiate this.

Internal Schematic



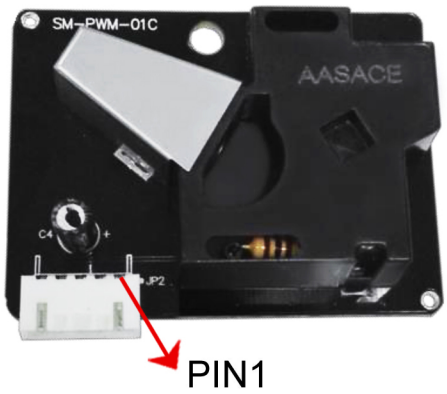
P1: small particle (1~2 μm),
P2: large particle (3 ~10 μm)

• SM-PWM-01C dust sensor cannot count particles or measure quantitatively; the size is only for reference.

Connector

Standard connector (SM-PWM-01C)

Connector Part No.	Symbol	Description	Maker
Connector	A2512WR-5P	2.5mm Pitch	http://www.cjt.cn/Product_Details.asp?P_ID=43
Housing			
Terminal			



Pin Configuration

Number	Symbol	Pin Description
1	GND	Ground, Connect with System ground
2	P2	Low pulse Signal output (P2) of large Particle, active low
3	Vcc	Input Supply voltage
4	P1	Low pulse Signal output (P1) of Small particle, active low
5	RX	

- Please refer the drawing for pin sequence.
- For P1 and P2, Do not need to external pull up re-Sister, Internal pull up resistor is 10K.

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www.amphenol-sensors.com

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