Indoor Air Quality Sensor Module
AM1005

Introduction

AM1005 is integrated air quality sensor module, able to detect indoor PM2.5 mass concentration, CO2 concentration, temperature and related humidity and output real-time measurement data. It is with stable performance, compact structure design, multi-function and optional connection ways, which can be widely used for IAQ monitor, high-end air purifier, ventilation system, air conditioner with purifying function and other consumer electronic products.

- ✧ The PM sensor module integrated adopts advanced laser scattering technology to detect PM2.5 mass concentrations precisely;
- ✧ The CO2 sensor module integrated adopts NDIR technology to detect indoor CO2 volume concentration (ppm);
- ✧ The RH&T sensor module integrated adopts capacitance resistance materials to detect indoor temperature and related humidity.

Main features

- ✧ Integrating laser particle sensor module (capable for real-time PM2.5 digital display), miniature and high-accuracy NDIR CO2 sensor module, RH&T sensor module; Integrations of different types of sensors can be also customized.
- ✧ There are four types of measuring mode for PM laser particle sensor module: single, time, continuous and dynamic. In dynamic measuring mode, lifespan can be prolonged to the highest degree.
- ✧ The NDIR CO2 sensor module is with high accuracy, great stability, automatic calibration program (no need of manual maintenance)
- ✧ UART_TTL, I2C signal output
- ✧ With Voltage regulator design and anti-static ABS lead-free injection molding shell which can effectively shield electromagnetic interference

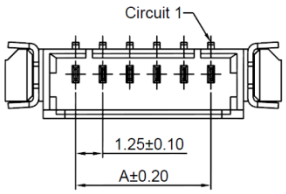
Applications

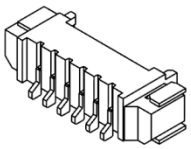
- ✧ IAQ monitor
- ✧ Air purifier
- ✧ Ventilation system
- ✧ Air conditioner with purifying function

Specifications

Working condition	Working temperature range	**-10 ~ 50℃**
	Storage temperature range	**-30 ~ 60℃**
	Working humidity range	**30%~80% RH (non-condensing)**
	Storage humidity range	**0~95%RH**
PM2.5 measurement	Principle	**laser scattering technology**
	Measurement range	**0 ~ 1000μg/m³**
	Measurement accuracy	**≤ 100 μg/m³: ±15μg/m³**
		> 100 μg/m³: ±15% of reading, (25℃ ±2℃, 50±10%RH, TSI8530， cigarette， GBT18801-2015,Temperature influence coefficient: 0.5%/℃ ~ 1%/℃ or 0.5μg/m³/℃ ~ 1μg/m³/℃ whichever is greater)
	Resolution	**1 μg/m³**
	Warm-up time	**6 seconds**
	Sampling way	**Fan, 0.6CFM**
	Life span	**Under ambient temperature and pressure, in the condition of continuous use, lifespan is 22000 hours. Lifespan could be prolonged by controlling working time interval of the optical source.**
CO2 measurement	Principle	**NDIR**
	Measurement range	**400-2000ppm**
	Measurement accuracy	**±(50ppm+5% of reading), auto-calibration within temperature and concentration range**
	Responding time (warm up)	**< 120s**
	Resolution	**1ppm**
	Sampling way	**Diffusion**
	lifespan	**8-10 years**
Temperature	Range	**-10~50℃**
	Resolution	**0.1℃**
	Accuracy	**±1.0℃**
Relative humidity	Range	**30~80%RH**
	Resolution	**0.1%RH**
	Accuracy	**±5%RH**
Electric property	Power supply	**5.0V±0.1VDC, ripple wave:<50mW**
	Working current	**<300mA (CO2:<120mA/PM2.5:<80mA)**
	Standby consumption	**≤1.5W**
	Warming-up time	**120 seconds**
	Communication interface	**UART_TTL (3.3V TTL), I2C (3.3V TTL)**
Structure	Dimension	**82*45*11.3mm**

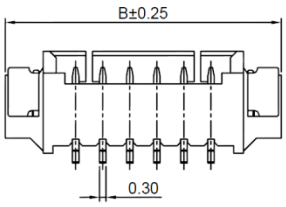
Connector type and I/O definitions

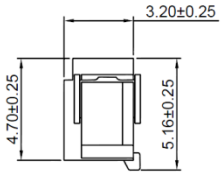




Ordering Information & Dimensions:

PART NO.	Dimensions	
	A	B
A1251WR-S-8P	8.75	15.25

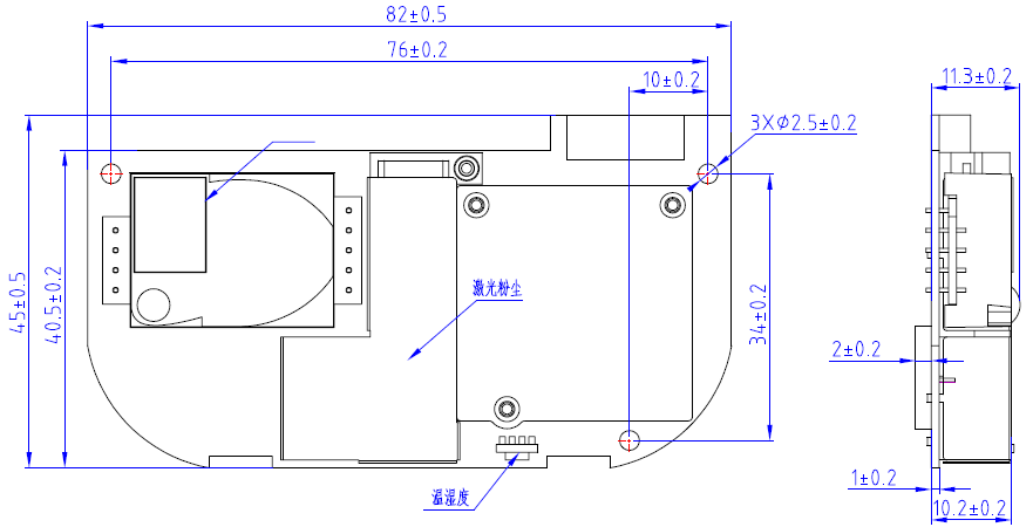




No.	Name	Description
1	+3.3V	POWER SUPPLY OUTPUT（+3.3V/100mA）
2	+5V	POWER SUPPLY INPUT(+5V)
3	SCL	I^2C CLOCK
4	SDA	I^2C DATA
5	TEST	UNCONNECTED
6	TX	UART-TX output (0-3.3V)
7	RX	UART-RX input (0-3.3V)
8	GND	POWER SUPPLY INPUT(GND)

Schematic diagram (Unit: mm, tolerances: ±0.2mm)

1) Installation Size



Application tips

◆The laser particle sensor module is suitable for indoor air quality testing, so please avoid working under bad environment which contains a lot of dust; after using the sensor, it is recommended that the sampling mouth should be closed.

◆When the laser particle sensor module works, please make sure the mouth of inlet and outlet unobstructed.

◆The sampling method of both NDIR CO2 sensor and semiconductor VOC sensor is diffusion, eyelet of gas diffusion should be reserved to make sure the gas can quickly and smoothly pass through the sensor module.

After-sales services and consultancy

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