

PRODUCT INFORMATION

Sensor for Air quality control

VOCs Sensor

- for the detection of Formaldehyde
- Toluene, Organic Solvent
- Semi conductor type,

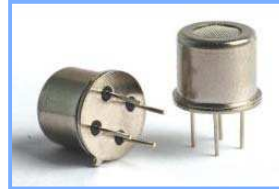
● General

It is applied detection of VOCs gases (toluene, formaldehyde, benzene, ect.)

● Application : Ventilator, Air cleaner, Hood.

● Operation range

- Working temperature : - 10°C ~ 50°C
- Working humidity : below saturation point
- Storage temperature : - 20°C ~ 80°C

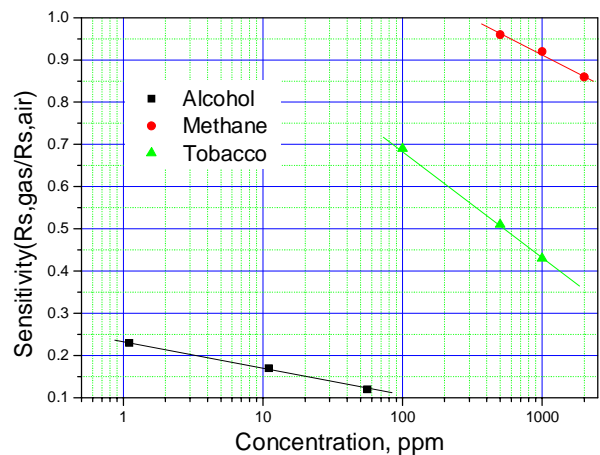
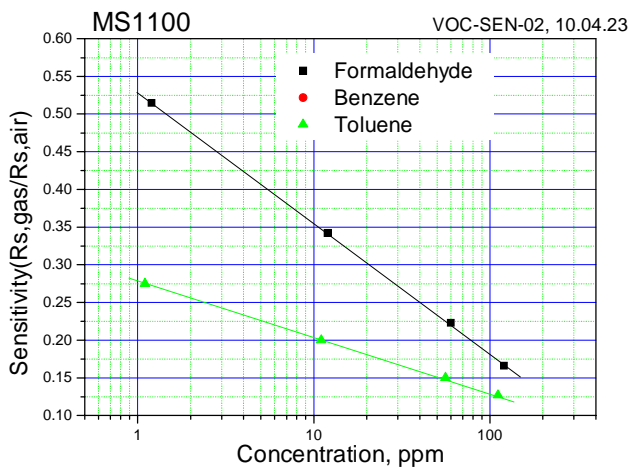


◀MS1100▶

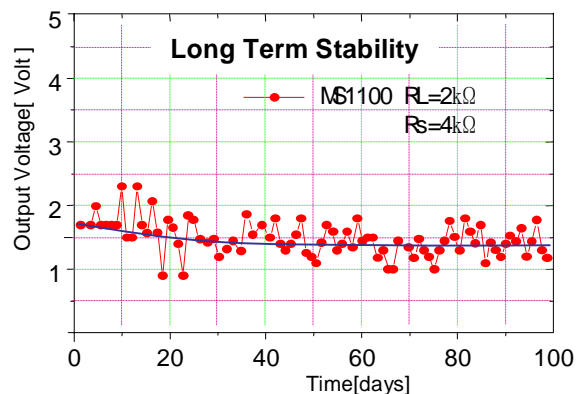
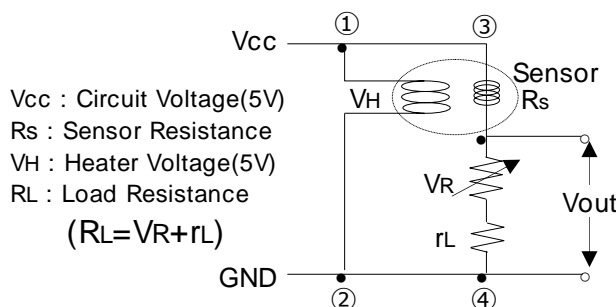
● Products characteristics

Product code		Characteristics	Output data	Worm- up time, PH
Pac- kage	MS1100	Wide detection of VOCs gases Application : Air cleaner, Hood	Analogue (1 ~ 5Volt) Basic circuit	5min 350mW
	MS1100 - P1XX	Standard, Op- amp amplifying Relay output : fixed concentration	Analogue (0.5 ~ 5Volt) Relay : Hi(4V), Low(0V)	5min 380mW

1. Sensitivity Characteristic Slope ($\beta = R_{s,gas} / R_{s,air}$)



2. Basic Measuring Circuit Stability



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3 Module

a. Characteristics

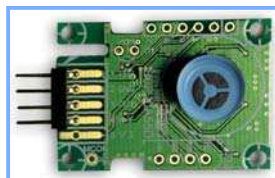
Index		Spec. & Test condition	
		MS1100-P1XX	MS1101-PX
Circuit Voltage	Vc	Module input Voltage : 5 ± 0.1 Volt	[EP]
	PH	Power consumption : 380mW Inrush current : Less than 195mA	Power consumption : 450mW Inrush current : Less than 215mA
Characteristics of Output data		- Analogue output (refer to 3.1, f.) - Relay output (Special ppm)	- Digital output ppm (Open collect)
Guarantee		- 3years over - Calibration interval 1years recommended	
Operating environment		- Temp. : - 10 ~ 50°C, Humidity : 5 ~ 90%RH, Non- condensing - Storage [EP] Temp. : - 20 ~ 70°C, Humidity : 0 ~ 90%RH	
Reaction time(T90)		- Reaction Time(T90) : Less then 10sec - Recovering Time(T90) : Less then 180sec	

b. Product code

c. Relay Output Max. Output range 1ppm : Hi(4.0~ 4.1volt) output at 1ppm(Toluene)



◀MS1100- P1XX▶



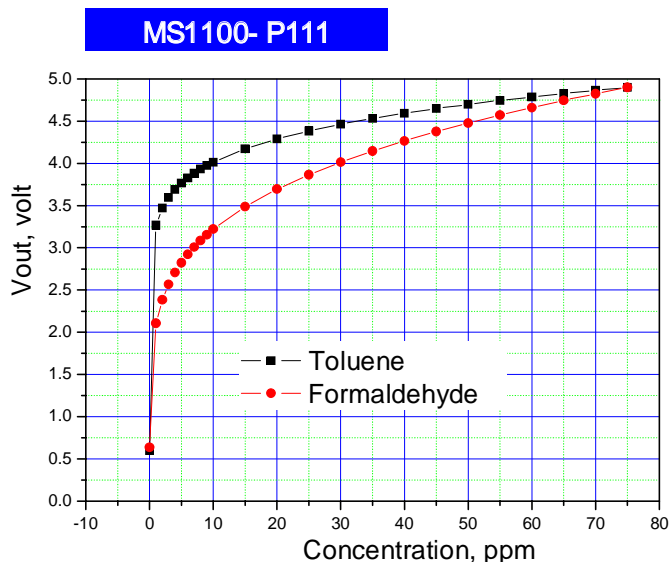
◀MS1101- P3XX▶

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d. Characteristics (Module)

- Error : ± 7%
- No compensation of Humidity & temperature



Formaldehyde 100322				Toluene 100322			
Con. (ppm)	output (Volt)	Con. (ppm)	Output (Volt)	Con. (ppm)	Output (Volt)	Con. (ppm)	Output (Volt)
0	0.64	20	3.69	0	0.60	20	4.29
1	2.10	25	3.87	1	3.27	25	4.38
2	2.38	30	4.02	2	3.47	30	4.46
3	2.57	35	4.15	3	3.60	35	4.53
4	2.71	40	4.27	4	3.69	40	4.59
5	2.82	45	4.38	5	3.77	45	4.65
6	2.92	50	4.48	6	3.83	50	4.70
7	3.01	55	4.57	7	3.88	55	4.75
8	3.09	60	4.66	8	3.93	60	4.79
9	3.16	65	4.74	9	3.98	65	4.83
10	3.22	70	4.82	10	4.01	70	4.86
15	3.49	75	4.90	15	4.17	75	4.90

** Formulation of Formaldehyde

$$\text{Log(ppm)} \equiv (- 1.095) + 0.627 * (\text{Vout})$$

$$\text{Log(ppm)} \equiv (- 2.631) + 1.528 * (\text{Vout}) + (-0.125) * (\text{Vout})^2$$

** Formulation of Toluene

$$\text{Log(ppm)} \equiv (- 3.478) + 1.104 * (\text{Vout})$$

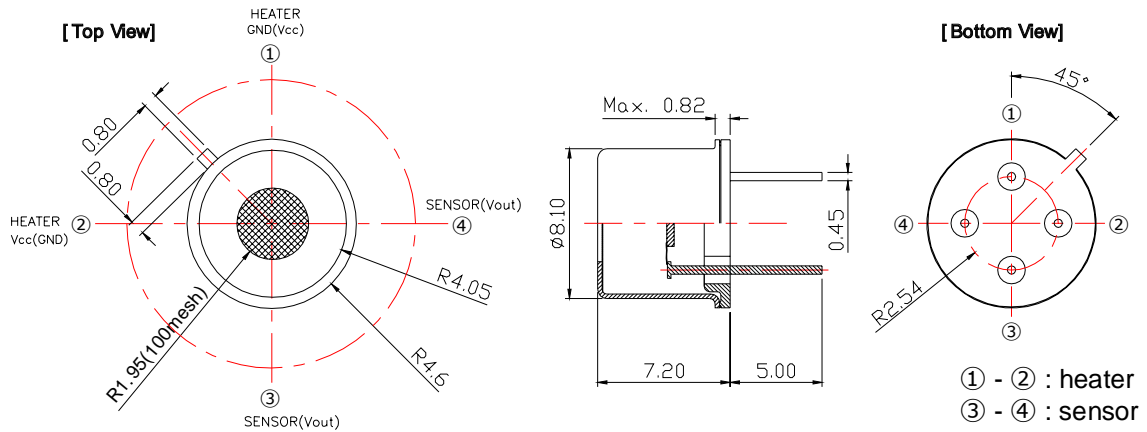
$$\text{Log(ppm)} \equiv (- 7.071) + 2.852 * (\text{Vout}) + (-0.210) * (\text{Vout})^2$$

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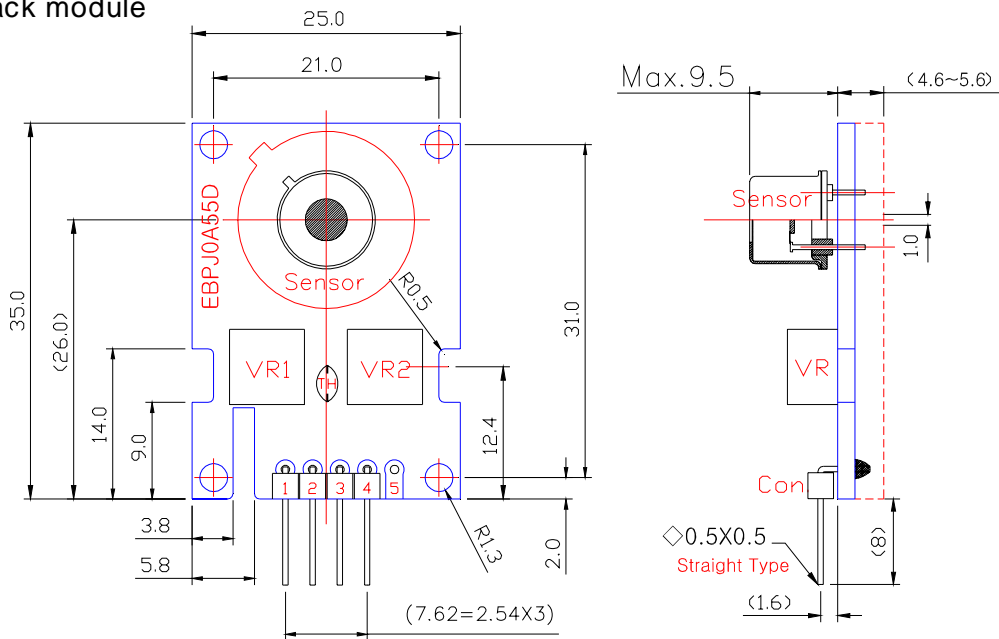
Sensor for Air quality control

4. Structure and Dimensions

4.1 Package



4.2 Pack module



a. Data output



- ① Vcc : 5.0volt
- ② GND
- ③ Data(Vout, analogue signal)
- ④ Relay

b. Relay Output

- Max. output range H2 340ppm : Hi(4.0~ 4.1volt) output at 70ppm(H2)
- : Hi(4.0~ 4.1volt) output at 480ppm(Smoke)