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.

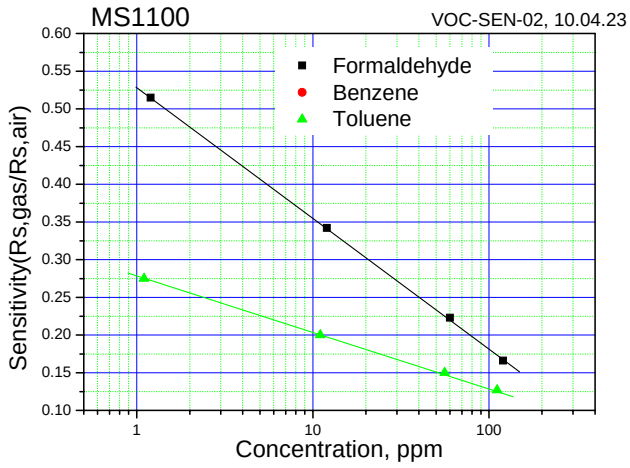
◑ Operation range
- Working temperature : -10℃ ~ 50℃
- Working humidity : below saturation point
- Storage temperature : -20℃ ~ 80℃

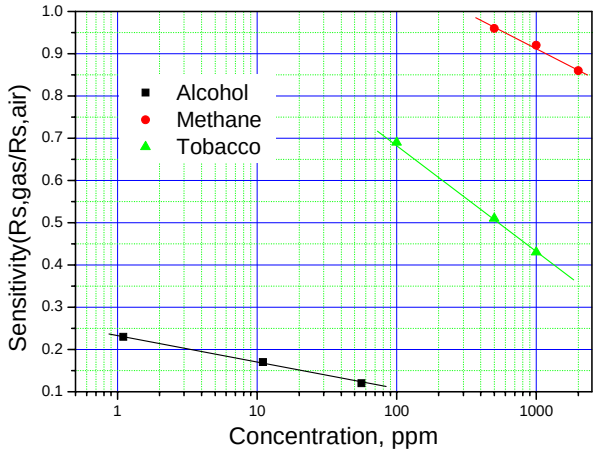

<MS1100>

◑ Products characteristics

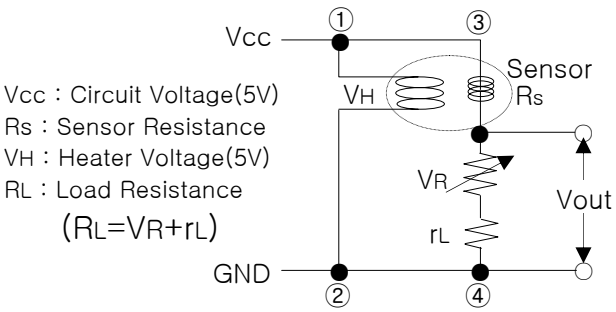
Product code		Characteristics	Output data	Worm-up time, PH
Pac-kage	MS1100	Wide detection of VOCs gases Application : Air cleaner, Hood	Analogue (1 ~ 5Volt) Basic circuit	5min 350㎽
				3
Module	MS1100 -P 1XX	Standard, Op-amp amplifying Relay output : fixed concentration	Analogue (0.5 ~ 5Volt) Relay : Hi(4V), Low(0V)	5min 380㎽

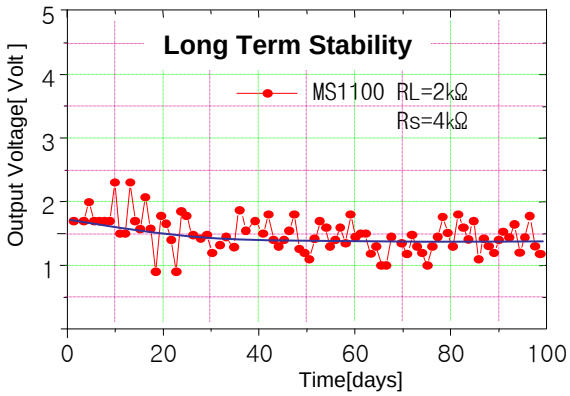
1. Sensitivity Characteristic Slope (β = Rs,gas / Rs,air)





2. Basic Measuring Circuit Stability





3 Module

a. Characteristics

Index		Spec. & Test condition	
		MS1100-P1XX	MS1101-PX
Circuit Voltage	Vc	Module input Voltage : 5±0.1Volt	←
	PH	Power consumption : 380㎽ Inrush current : Less than 195mA	Power consumption : 450㎽ 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℃, Humidity : 5 ~ 90%RH, Non-condensing - Storage → Temp. : -20 ~70℃, 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

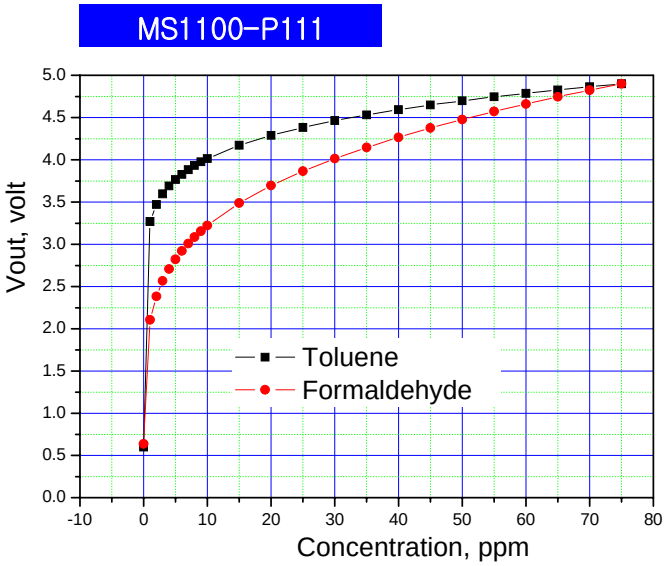
Max. Output range 1ppm : Hi(4.0~4.1volt) output at 1ppm(Toluene)

<MS1100-P1XX>

<MS1101-P3XX>

d. **Characteristics (Module)**

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



Formaldehyde 100322			
Con. (ppm)	output (Volt)	Con. (ppm)	Output (Volt)
0	0.64	20	3.69
1	2.10	25	3.87
2	2.38	30	4.02
3	2.57	35	4.15
4	2.71	40	4.27
5	2.82	45	4.38
6	2.92	50	4.48
7	3.01	55	4.57
8	3.09	60	4.66
9	3.16	65	4.74
10	3.22	70	4.82
15	3.49	75	4.90

Toluene 100322			
Con. (ppm)	Output (Volt)	Con. (ppm)	Output (Volt)
0	0.60	20	4.29
1	3.27	25	4.38
2	3.47	30	4.46
3	3.60	35	4.53
4	3.69	40	4.59
5	3.77	45	4.65
6	3.83	50	4.70
7	3.88	55	4.75
8	3.93	60	4.79
9	3.98	65	4.83
10	4.01	70	4.86
15	4.17	75	4.90

** Formulation of **Formaldehyde**

Log(ppm) = (−1.095) + 0.627 * (Vout)

Log(ppm) = (−2.631) + 1.528 * (Vout) + (−0.125) * $(Vout)^2$

** Formulation of Toluene

Log(ppm) = (−3.478) + 1.104 * (Vout)

Log(ppm) = (−7.071) + 2.852 * (Vout) + (−0.210) * $(Vout)^{2.}$

e. Product code

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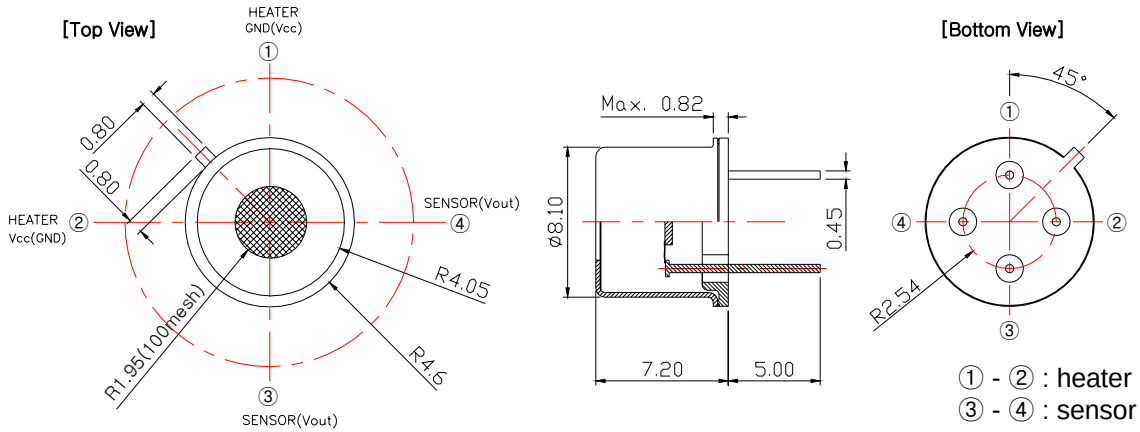
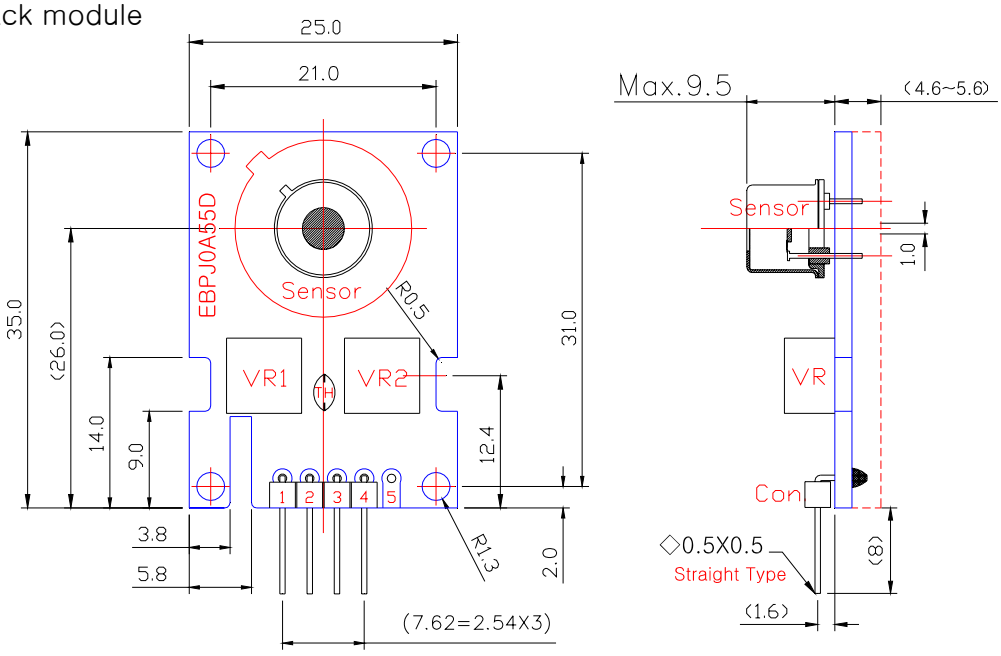
f. Relay Output Max. Output range 1ppm : Hi(4.0~4.1volt) output at 1ppm(Toluene)

4. Structure and Dimensions

4.1 Package



4.2 Pack module



a. Data output

□□ □□	① Vcc : 5.0volt
①② ③ ④	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)