# PRODUCT INFORMATION Sensor for Air quality control

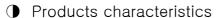
# **VOCs Sensor**

- 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° ~ 80° C

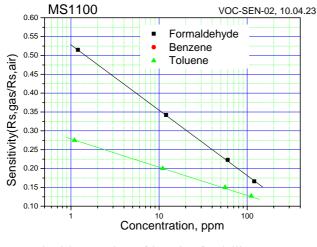


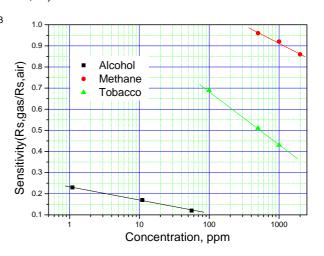


<MS1100>

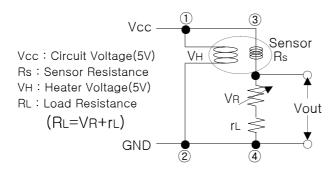
Product code		Characteristics	Output data	Worm-up time, PH
Pac- kage	MS1100	Wide detection of VOCs gases Application: Air cleaner, Hood	Analogue (1 ~ 5Volt) Basic circuit	5min 350mW
Module	MS1100 - P1XX	Standard, Op-amp amplifying Relay output: fixed concentration	Analogue (0.5 ~ 5Volt) Relay: Hi(4V),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

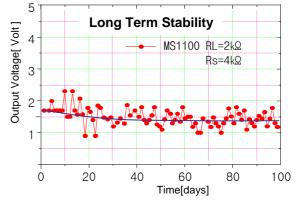
## 1. Sensitivity Characteristic Slope (β = Rs,gas / Rs,air)





## 2. Basic Measuring Circuit Stability





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# 3 Module

# a. Characteristics

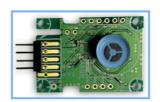
Index		Spec. & Test condition		
		MS1100-P1XX	MS1101-PX	
Circuit Voltage	Vc	Module input Voltage: 5±0.1Volt	<b>←</b>	
	PH	Power consumption: 380mW Inrush current: Less than 195mA	Power consumption: 450mW Inrush current: Less than 215mA	
Characteristics of Output data		- Analogue output (refer to 3.1, 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 → 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>

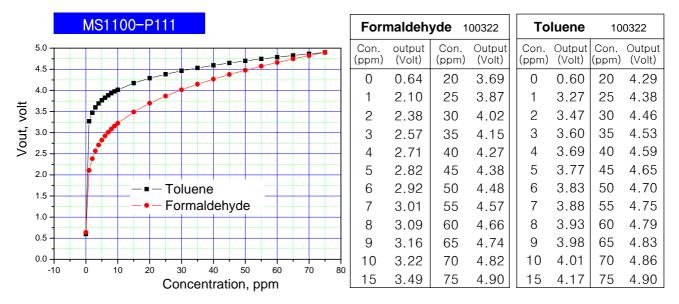


<MS1101-P3XX>

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#### d. Characteristics (Module)

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



\*\* Formulation of Formaldehyde

$$Log(ppm) = (-1.095) + 0.627 * (Vout)$$

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

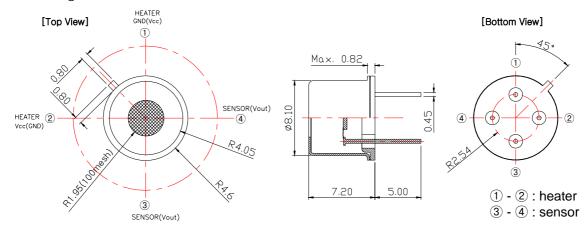
\*\* Formulation of Toluene

$$Log(ppm) = (-3.478) + 1.104 * (Vout)$$

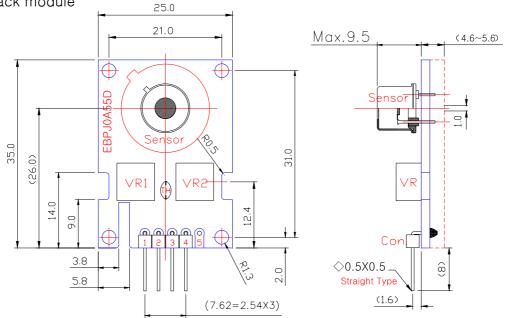
$$Log(ppm) = (-7.071) + 2.852 * (Vout) + (-0.210) * (Vout)^{2}$$

## 4. Structure and Dimensions

#### 4.1 Package







## 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)