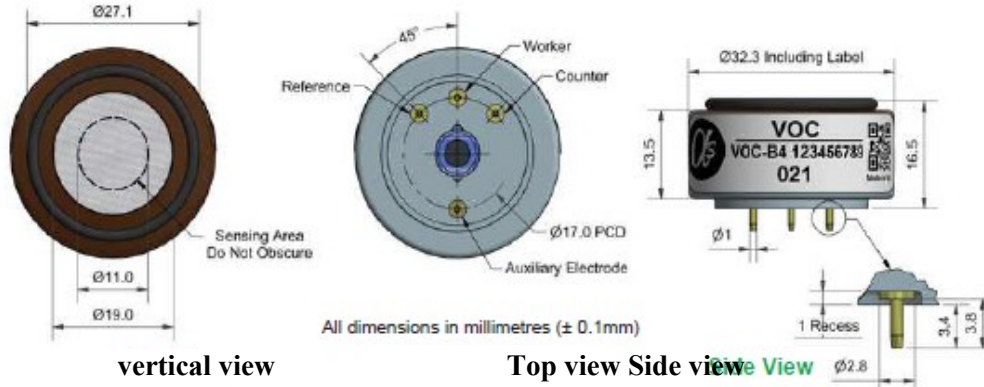


VOC-B4 4-Electrode

Volatile organic compounds VOC sensor



Figure 1 Schematic Diagram of VOC-B4



function	sensitivity	Sensitivity in 2ppmCO (nA/ppm)	400~700
	response time	Time from zero to 2ppmCO (s)	<30
	zero current	Output at 20°C in zero-level air (nA)	±200
	noise *	Standard deviation ± 2 (equivalent ppb)	20
	range	Measuring limits (ppm) that guarantee product performance	100
	Linearly	The ppm value of the full scale error is linear at 0-10 ppm and represents the maximum ppm value for gas pulse stabilized reaction	±1
	overload		1000
life span	zero drift	Equivalent ppb values that change with the year in the laboratory air	±500
	sensitivity drift	Percentage change in laboratory air over the year, measured monthly	< 15
	working life	Number of months to which the output is reduced to 50% of the original signal (24 months guaranteed)	> 36
environment	-20°C sensitivity	2ppmCO at (-20°C output/20°C output)%	60~80
	Sensitivity at 50°C	At 2ppmCO, (output at 50°C/ output at 20°C)%	95~110
	-20°C when zero point	Change in nA with 20°C as the base	±20
	50°C at zero point	Change in nA with 20°C as the base	1800~2200
cross sensitivity	C ₂ H ₆ O	Gas sensitivity percentage at <1ppmC₂H₆O	<100
	H ₂ S	Gas sensitivity percentage measured at 5ppmH₂S	< 350
	NO ₂	Sensitivity percentage of gas measured at 5ppmNO₂	<-80
	Cl ₂	Gas sensitivity percentage₂ measured at 5ppmCl	< -40
	NO	Gas sensitivity percentage measured at 5ppmNO	< 30
	SO ₂	Gas sensitivity percentage₂ at 5ppmSO	< 80
	H ₂	Gas sensitivity percentage measured at 100ppmH₂ (20°C)	< 50
	C ₂ H ₄	Gas sensitivity percentage measured at 40ppmC₂H₄	< 120
	NH ₃	Percentage sensitivity of gas₃ at 20ppmNH	< -0.1
CO ₂	Sensitivity percentage of gas measured at 5%Vol CO₂	< 0.1	
key parameter	temperature range	°C	-30~50
	pressure limit	kPa	80~120
	Humidity range	Percentage of continuous relative humidity	15~90
	Storage period	Number of months for preservation from 3 to 20°C (to be kept in a sealed tank)	6
	load resistance	Ω (ISB circuit board is recommended)	33~100
	weight	g	< 13

Figure 2. Linearity of the Sensor to 0-10ppm CO

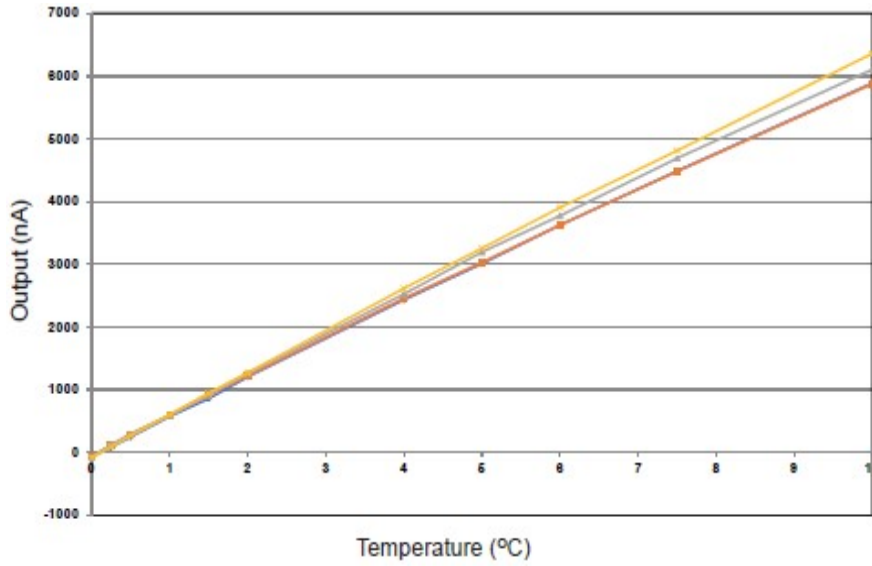


Figure 2 shows an example of the sensor's response at CO concentrations of 0 ~ 10ppm

Figure 3 Zero Temperature Characteristics

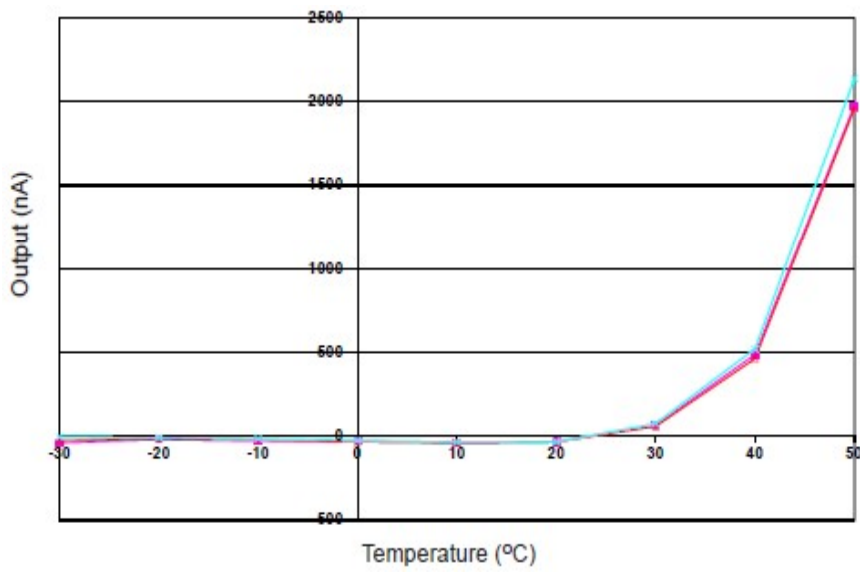


Figure 3 shows an example of the zero point output variation of the working electrode caused by temperature changes, in units of nA.

VOC - B4 can detect both VOC gas and CO gas. The simultaneous use of VOC - B4 and CO - B4 sensors can estimate the VOC concentration without bias.

The data given in this TDS refers to the application of the VOC - B4 sensor without bias. However, the sensor can be used in a 0 ~ 0.3V bias (see application note AAN - 805)

To calculate the concentration of VOC, ensure that the electronic zero point offset, sensor zero point offset, temperature characteristics, sensitivity (nA / ppm) calibration and sensitivity temperature characteristics of the two sensor signals have been corrected.

C ₂ H ₆ O detection parameters		
Performance sensitivity	Sensitivity in C_2H_6O (nA / ppm)	400~650
response time	Time from zero to C_2H_6O 1ppmC (s)	< 30
zero current	Output at 20°C in zero-level air (nA)	±200
noise	Standard deviation ± 2 (equivalent ppb)	20
range	Measuring limits (ppm) that guarantee product performance	2
degree of linearity	The ppm value of the full scale error is linear at 0~ C_2H_6O 2	< 0.13
overload	Maximum ppm value of gas pulse stabilized reaction	5
Lifetime zero drift	Equivalent ppb values that change in the laboratory air from year to year	±500
sensitivity drift	Percentage change in laboratory air over the year, measured monthly	< 15
working life	Number of months to which the output is reduced to 50% of the original signal (24 months guaranteed)	> 36
Sensitivity at 20°C	2ppmCO at (-20°C output/20°C output)%	ND
Sensitivity at 50°C	2ppmCO when, (50°C output/20°C output)%	ND
-20°C when zero point	Change in nA with 20°C as the base	±20
50°C at zero point	Change in nA with 20°C as the base	1800~2200
cross connection CO	Gas sensitivity percentage measured at 2ppmCO	< 125
Sensitivity H₂S	Gas sensitivity percentage measured at 5ppmH ₂ S	< 450
NO ₂	Sensitivity percentage of gas measured at 5ppmNO ₂	< -90
Cl ₂	Gas sensitivity percentage ₂ measured at 5ppmCl	< -40
NO	Gas sensitivity percentage measured at 5ppmNO	< 25
SO ₂	Gas sensitivity percentage ₂ at 5ppmSO	< 90
H ₂	Gas sensitivity percentage measured at 100ppmH ₂ (20°C)	< 50
C ₂ H ₄	Gas sensitivity percentage measured at 40ppmC ₂ H ₄	< 120
NH ₃	Percentage sensitivity of gas ₃ at 20ppmNH	< -0.1
CO ₂	Sensitivity percentage of gas measured at 5%Vol CO ₂	< 0.1
Key temperature ranges	°C	-30~50
Pressure range of parameters	kPa	80~120
Humidity range	Percentage of continuous relative humidity	15~90
Storage period	Number of months for preservation from 3 to 20°C (to be kept in a sealed tank)	6
load resistance	Ω (ISB circuit board is recommended)	33~100
weight	g	< 13

Figure 4. Linearity of the Sensor to Ethanol from 0 to 860ppb (approximation)

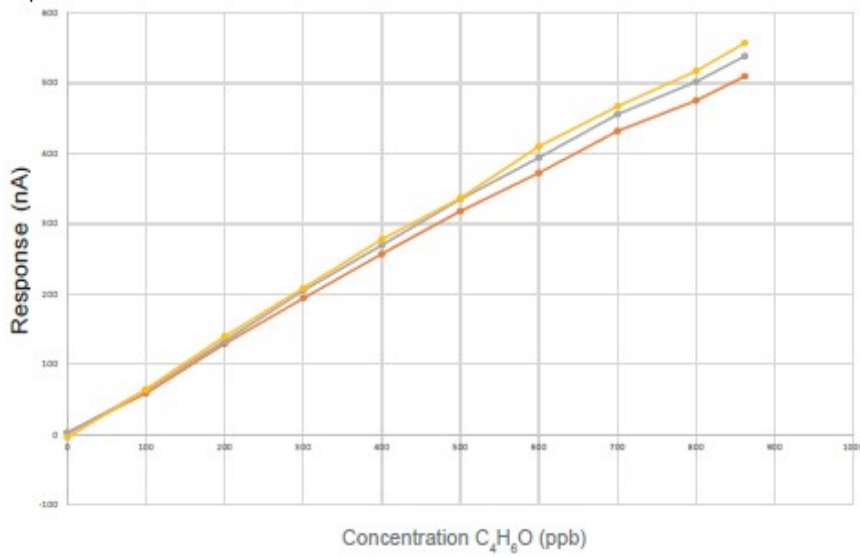


Figure 4 shows an example of the sensor output at ethanol concentrations 0 to 860ppb (approximate).

Figure 5 Reaction of 860ppb (approximation) Ethanol

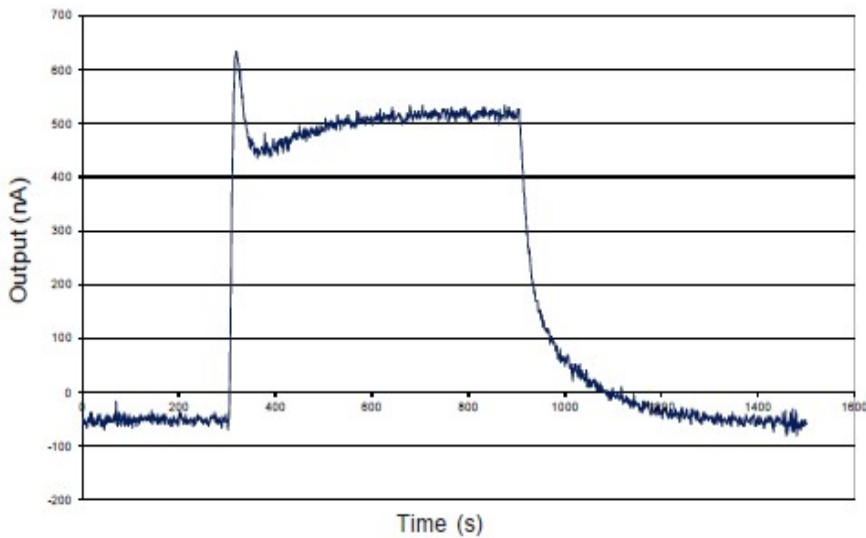


Figure 5 shows an example of the sensor output at ethanol concentration 860ppb.

Figure 6 Reaction of 2ppm C₄H₈

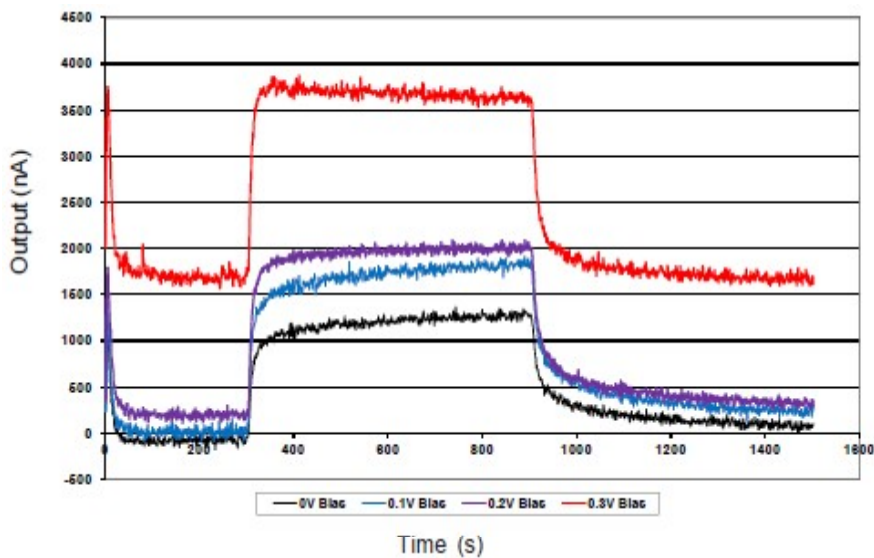


Figure 6 shows examples of the transducer's response to 2ppm C₄H₈ at different biases.