Carbon Monoxide Sensor

p-type Metal Oxide

Technical Specification

This sensor works well in ambient conditions and also in extreme temperatures and humidities where electrochemical sensors cannot survive. This metal oxide gas sensor is equipped with a filter that allows CO selectivity.

Unlike common n-type sensors, this p-type sensor has a large dynamic range, repeatable response, low humidity response and resistance increases in the presence of CO.

The change in resistance can be converted to an output voltage via a simple electrical circuit. Although the sensor can be used in constant temperature/ voltage mode, best response is achieved when the sensor is cycled between 400°C (sensing temperature) and 525°C (reset temperature). See our Application Note.

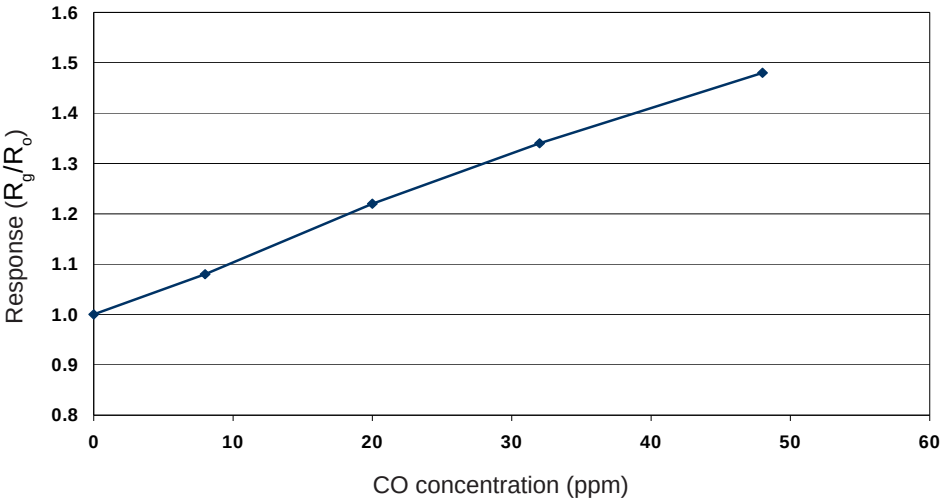
PERFORMANCE

Range	ppm CO limit of performance warranty	5 to 500
Sensor resistance (R_o)	kΩ (50%rh, 23 (± 2)°C)	220 ±50
Sensor resistance ratio (R_g/R_o x 100%)	% CO @ 20ppm in air	120 ±15
Gas response relationship (R_g/R_o - 1 = k.Conc)	5 - 50ppm	0.01 ±10%
Gas response relationship (R_g/R_o - 1 = k.Conc$^{0.5}$)	50 - 500ppm	0.08 ±15%
Heater resistance (R_H @ RT)	Ω (23 ±1°C)	10 ±1.5
Heater resistance (R_H @ sensing temp.)	Ω (400 ±10°C)	22 ±3
Heater resistance (R_H @ reset temp.)	Ω (525 ±10°C)	26 ±3
Heater power consumption (mW) typical for 5:1	V_H = 2.7 ±0.2V (400°C)	340 ±30
	3.7 ±0.3V (525°C)	530 ±50
Operating Temperature Range	°C	-20 to 120

CROSS SENSITIVITY

H_2 sensitivity	% measured gas @ 100 ppm H_2	TBA
EtOH sensitivity	% measured gas @ 50 ppm EtOH	TBA
C_3H_8 sensitivity	% measured gas @ 500 ppm C_3H_8	TBA
NH_3 sensitivity	% measured gas @ 25 ppm NH_3	TBA

Figure 1 Response at low concentrations



Response from 8-48ppm CO, operating in 2-temperature mode with a 5:1 cycle ratio of sensing (400°C) and resetting (525°C).

iSweek www.isweek.com
Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
Tel: + 86-755-83289036 Fax: + 86-755-83289052 E-mail: sales@isweek.com

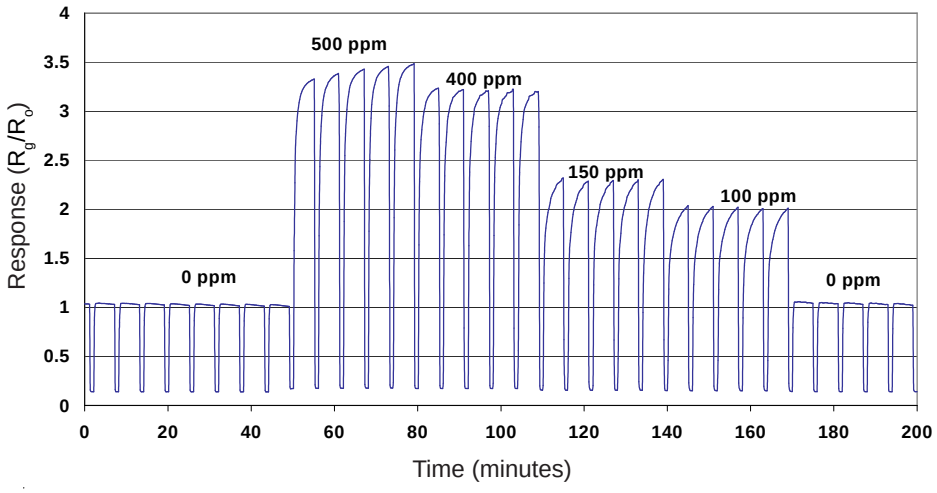
Carbon Monoxide Sensor

p-type Metal Oxide

Performance Data

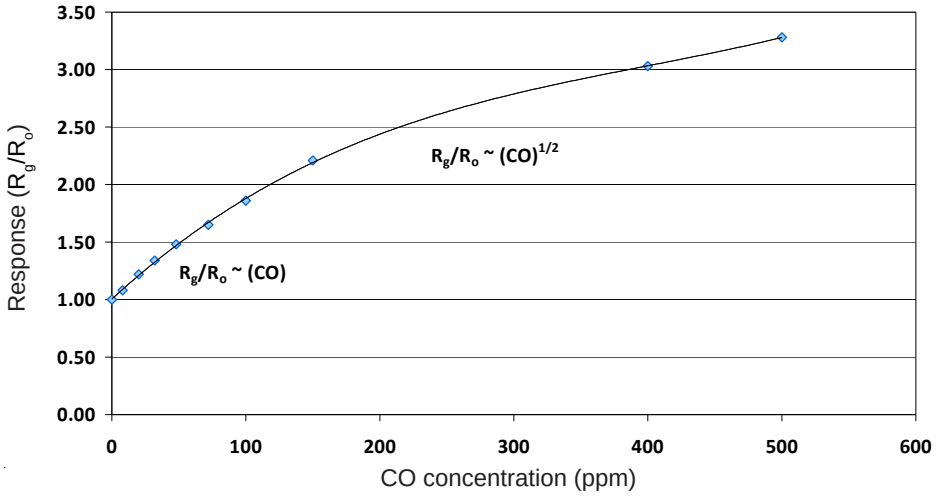
Technical Specification

Figure 2 Real-time response at high CO concentrations



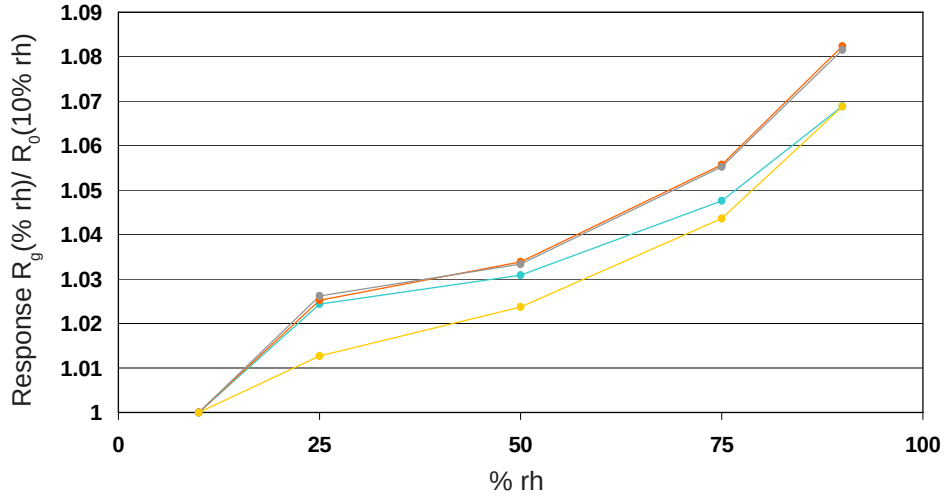
Real-time response data over range 100 - 500ppm CO in 50% rh air. Sensor operating in 2-temperature mode, pulsing between 5 mins at 400°C for 5 mins and 525°C for 1 min.

Figure 3 Response from 10 to 500ppm CO



Response over range of 8 - 500ppm CO operating in 2-temperature mode with a 5:1 cycle ratio of sensing (400°C) and resetting (525°C). Note linear behaviour <50ppm and power law behaviour >50ppm.

Figure 4 Response from 10% to 90% rh at 23°C



Response over range of 10% - 90% rh air, operating in 2-temperature mode with a 5:1 cycle ratio of sensing (400°C) and resetting (525°C)

iSweek www.isweek.com
Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
Tel: + 86-755-83289036 Fax: + 86-755-83289052 E-mail: sales@isweek.com