Hydrogen Sulfide Sensor

p-type Metal Oxide

Technical Specification

This sensor responds well in the temperature and humidity extremes of the oil and gas industry.

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 H_2S.

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 H_2S	1 to 100
Sensor resistance (R_o)	kΩ (50% rh, 23 ±2°C)	280 ±50
Sensor resistance (R_g)	kΩ H_2S @ 24ppm in air	1500 ±500
Sensor resistance ratio (R_g/R_o x 100%)	% H_2S @ 24ppm in air	550 ±100
Gas response (R_g/R_o - 1 = k.Conc^n)	k	0.5 ± 0.1
	n	0.7 ± 0.05
Heater resistance (R_H @ 23 ±2°C)	Ω	10.5 ±1.5
Heater resistance (R_H @ 400 ±10°C)	Ω	25 ±3
Heater resistance (R_H @ 525 ±10°C)	Ω	29 ±3
Heater power consumption (mW)	V_H = 2.7 ±0.2V (400°C)	360 ±30
	V_H = 3.7 ±0.3V (525°C)	550 ±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
SO_2 sensitivity	% measured gas @ 25 ppm SO_2	TBA

At the end of the product's life, do not dispose of any electronic sensor, component or instrument in the domestic waste, but contact the instrument manufacturer, Alphasense or its distributor for disposal instructions.

For further information on the performance of this sensor, on other sensors in our range. please contact Alphasense Ltd.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

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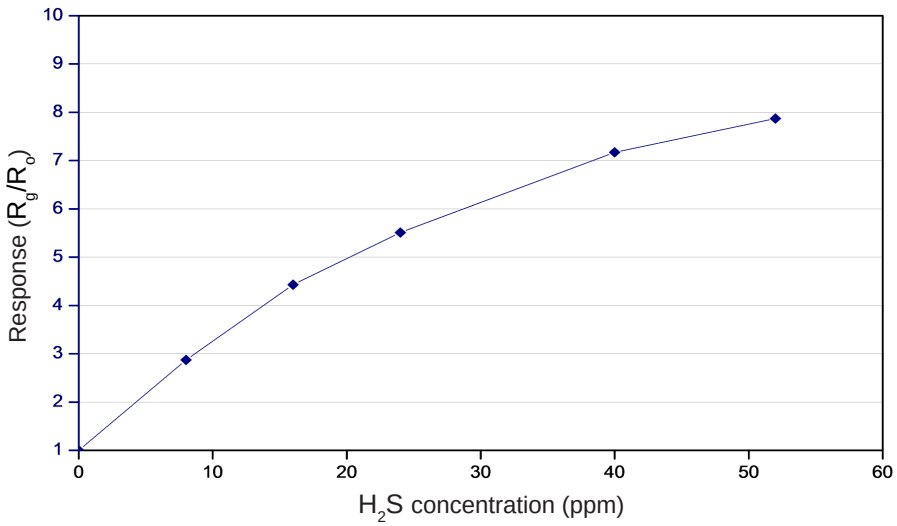
Performance Data

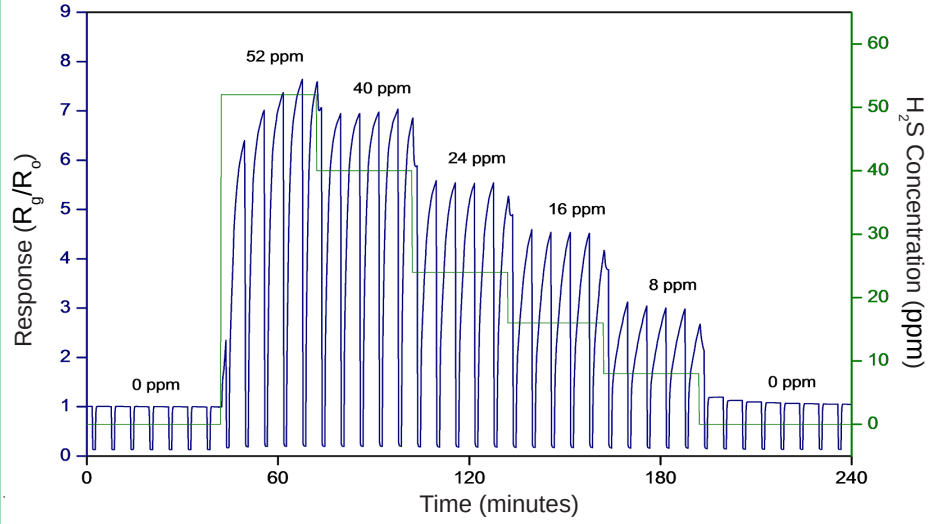
Technical Specification

Figure 1 Response from 8 to 52ppm H_2S



Calibration curve in 50% rh air. Operating in 2-temperature mode with a 5:1 cycle ratio of sensing (400°C) and resetting (525°C).

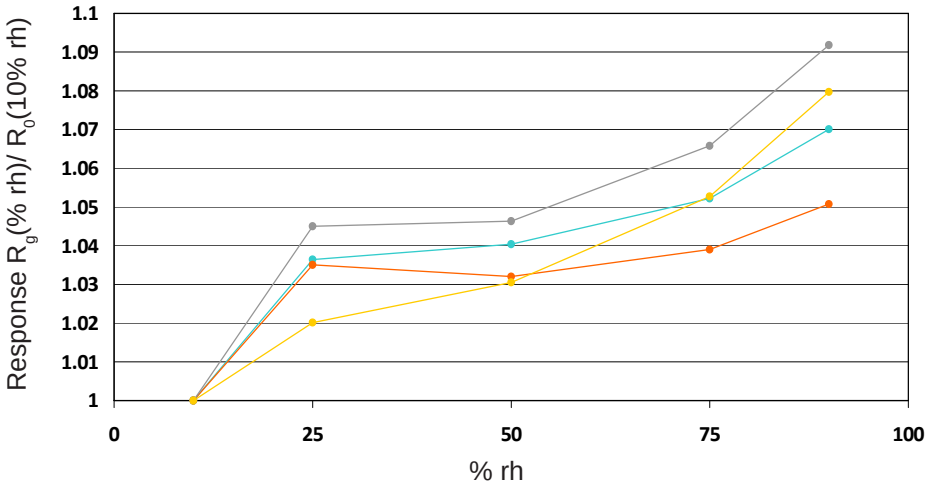
Figure 2 Response from 8 to 52ppm H_2S



Real time response for 8-52ppm H_2S in 50% rh air. Sensor operating in 2-temperature mode with a 5:1 cycle ratio of sensing (400°C) and resetting (525°C).

The sensor returns repeatedly to the same baseline resistance.

Figure 3 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)