



# Low Level NO<sub>x</sub> Data Sheet (P/N 706)

Synkera Technologies, Inc.  
2605 Trade Centre Ave., Ste. C  
Longmont, CO 80503

### SENSOR FEATURES:

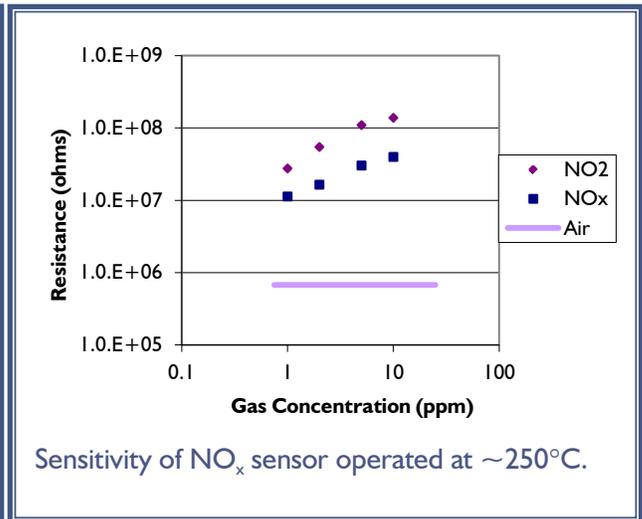
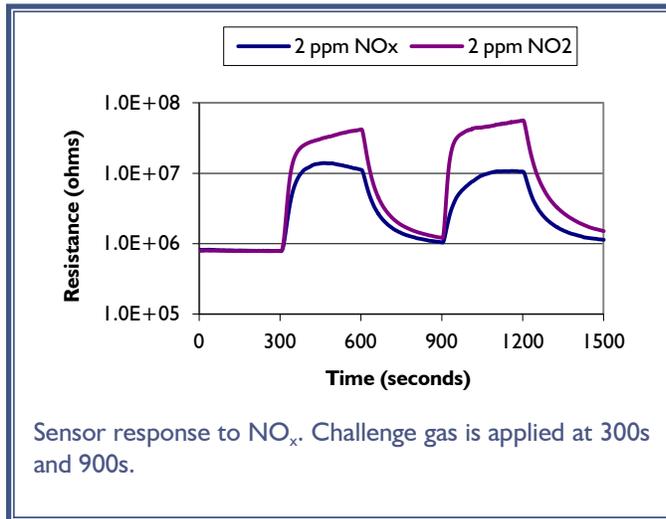
- Sensor detects very low NO<sub>x</sub> concentrations (<0.5 ppm to 10 ppm)
- Larger dynamic range available (5 ppm to 100 ppm, may require larger power input to heater)
- Environmental temperature range of -20 to 50°C
- Environmental humidity range of 0 to 90% RH, non-condensing
- Low dependence on flow rate

### TYPICAL NO<sub>x</sub> SENSOR SELECTIVITY

CHALLENGE GAS	CONCENTRATION	RG/RA OR -RA/RG
NO <sub>2</sub>	10 ppm	200
NO <sub>x</sub>	10 ppm	45
H <sub>2</sub>	100 ppm	-2.2
NH <sub>3</sub>	25 ppm	-1.1
CO <sub>2</sub>	5%	No response
SO <sub>2</sub>	5 ppm	No response
CH <sub>4</sub>	1%	No response

### SENSOR RESPONSE CHARACTERISTICS

The figures below show typical response data for sensors operated in clean, dry gas.



### ELECTRICAL CHARACTERISTICS

The electrical properties below are typical for the Low Level NO<sub>x</sub> Sensor prototypes. If the actual values differ the customer will be notified with the shipment. Circuits are available that will be preset to the correct values.

PROPERTY	SYMBOL	VALUE	REMARKS
Heater Power Consumption	P <sub>HL</sub>	~ 500 mW	At V <sub>H</sub> = 4.7
Heater Voltage	V <sub>HL</sub>	4.7 VDC	T <sub>sensor</sub> ~200°C
Heater Resistance	R <sub>H</sub>	30Ω ± 2 Ω	At room temperature
Sensing Voltage	V <sub>C</sub>	5.0 VDC	Recommended
Resistance in Air	R <sub>a</sub>	20 kΩ/20 MΩ	Min/Max
Resistance in 10 ppm NO <sub>2</sub>	R <sub>10</sub>	2 MΩ/10,000 MΩ	Min/Max
Sensitivity	R <sub>10</sub> /R <sub>a</sub>	100	Min

\*Note that all measurements were made in dry air, at room temperature

720-494-8401

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720-494-8402 (fax)

- For information on warranty, please refer to Synkera Technologies, Inc. Standard Terms and Conditions.
- Information on this data sheet represents typical values from a number of Synkera sensors. Actual values from sensor to sensor can vary slightly.

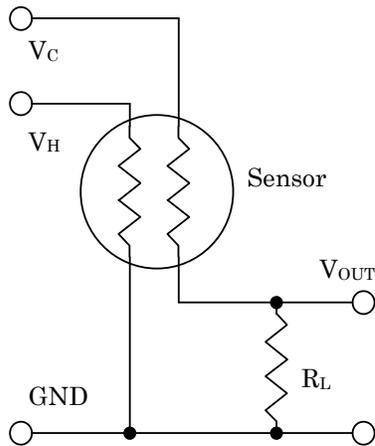


## Operation of Synkera MOS Sensors

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### BASIC MEASUREMENT CIRCUIT:

The sensor can be operated using a simple voltage divider. This requires two voltage supplies: heater voltage ( $V_H$ ) and circuit voltage ( $V_C$ ).  $V_H$  is applied to the heater in order to maintain a constant, elevated temperature, for optimum sensing.  $V_C$  is applied to allow a measurement of the output voltage ( $V_{out}$ ) across a load resistor ( $R_L$ ).



Pins 1 and 3 on the TO-39 header are attached to the heater. Apply  $V_H$  across these pins.

Pins 2 and 4 on the TO-39 header are attached to the resistive sensor element. Connect these pins in the measuring circuit.

Synkera supplies basic measurement circuitry for many of our sensors. Please inquire or refer to our website for information regarding circuitry for your application

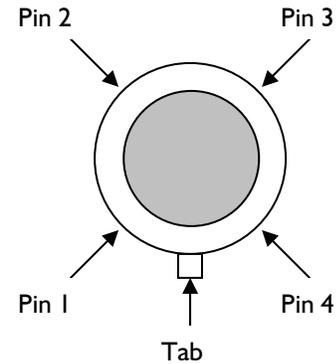
### SENSOR RESISTANCE CALCULATION:

Sensor Resistance ( $R_s$ ) is calculated using the following formula:

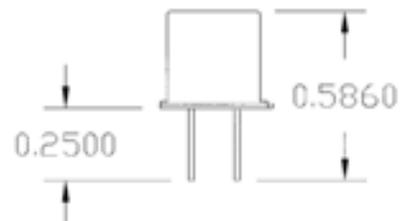
$$R_s = \frac{V_C - V_{out}}{V_{out}} * R_L$$

### SENSOR PIN OUT:

Top view of sensor



### SENSOR DIMENSIONS:



Synkera Technologies strives to be customer oriented. If you have a special application you would like to discuss, or questions you would like answered please contact us at [info@synkera.com](mailto:info@synkera.com).

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