

Cirius 1

characteristic Miniature infrared hydrocarbon gas sensor

- Temperature compensation detector
- Test range: 0-100%LFL methane, 0-100% LFL hydrocarbons, 0-100% vol methane, all-metal structure
- Patented sensor design
- Small internal volume
- Low power consumption
- Output of active signal and reference signal
- Embedded thermistor temperature sensor output
- Wide temperature operating range
- quick response
- Protect against "poisoning" fault protection
- operation electrical isolation housing

Patent No. GB2449433

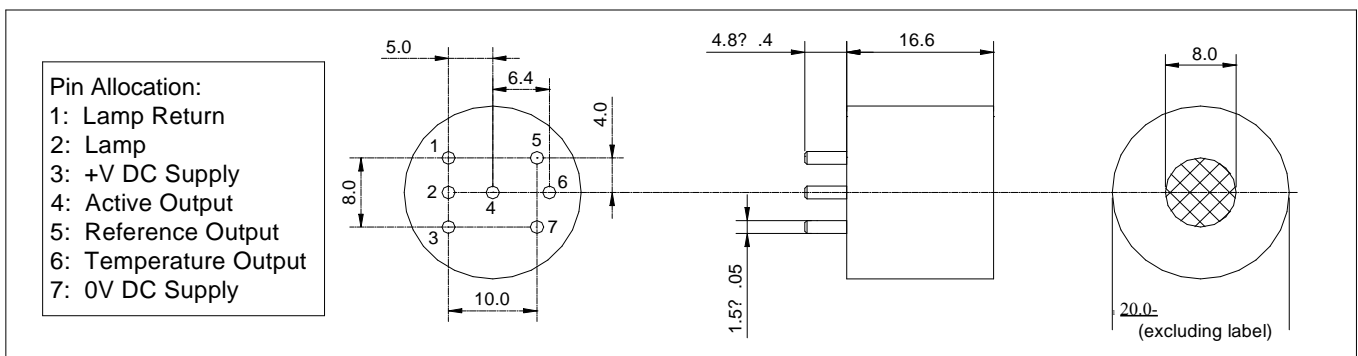
Introduction and Operation

The Cirius series sensors utilize non-diffuse infrared technology to detect gas presence. The sensor comprises an infrared emitter, a dual-infrared detector, and a patented gas diffusion optical device. The dual-infrared detector responds to variations in incident light, while the sensor typically operates with the infrared emitter driven at 2Hz to 4Hz with a 50% duty cycle. Subsequently, the sensor generates active wavelength and reference wavelength outputs. If target gas is present, it modifies the active wavelength but not the reference wavelength. These outputs consist of small AC signals synchronized with source pulses, which are superimposed on a DC blanking pulse level. The sensor also provides an internal temperature measurement through embedded thermistors. The sensor requires power supply for the infrared detector, and its external connections comply with the industrial standard 7-pin configuration.

To operate the sensor effectively, it must be connected to a suitable circuit that provides a source driver and can extract a small AC signal from DC dimming pulse levels. The circuit should amplify this AC signal, extract a specific value, and process the result to generate a linear output related to gas concentration. For comprehensive performance specifications, the sensor's temperature output should be utilized for temperature compensation. Clairair Limited offers technical support regarding implementation and application notes.

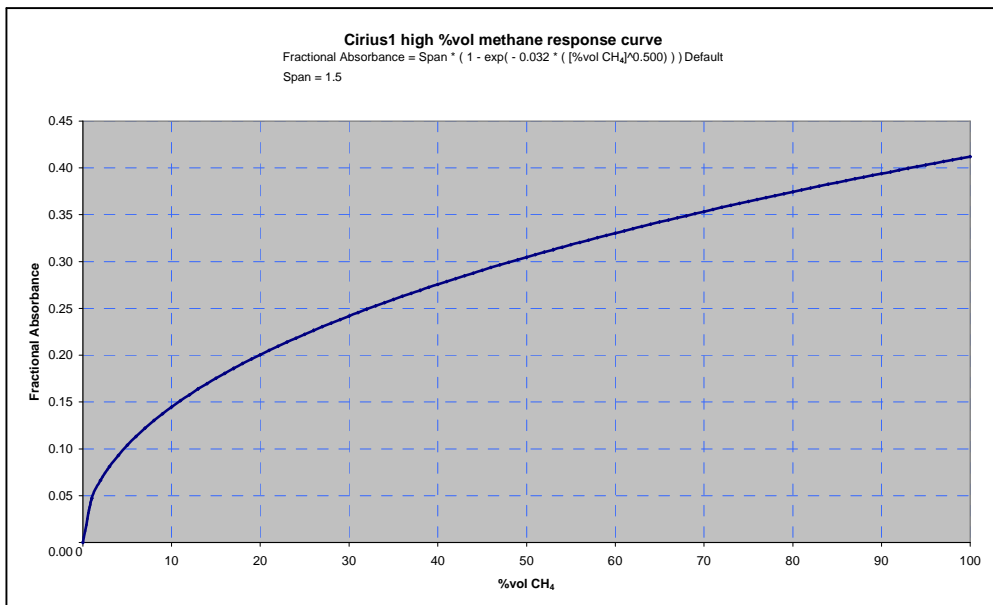
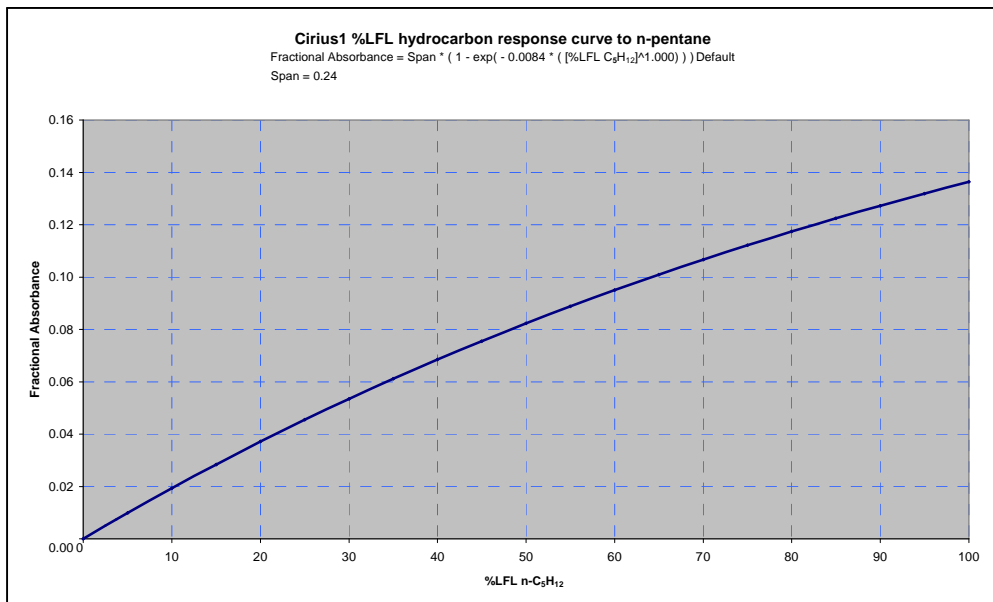
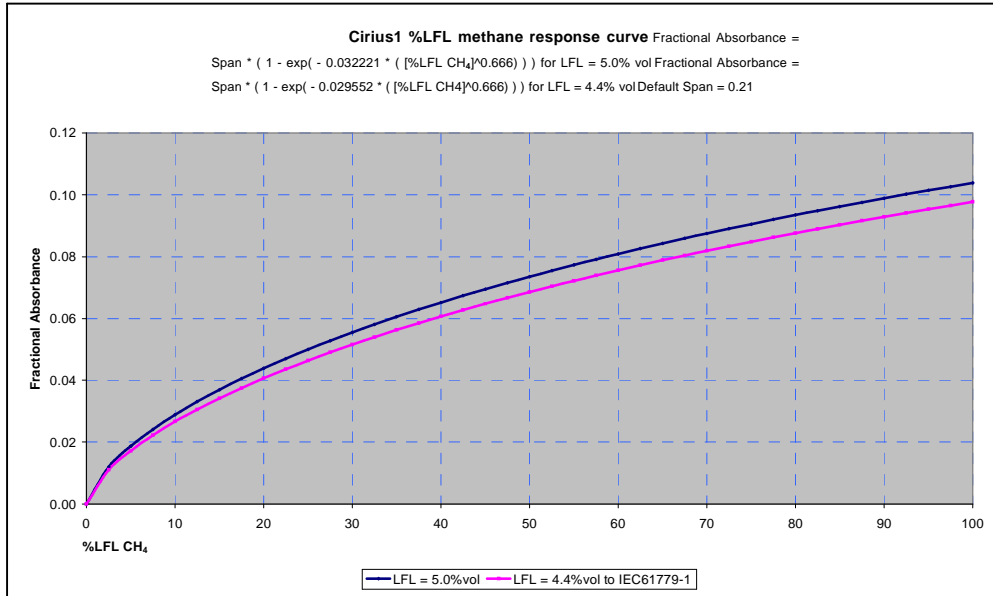
Outline Dimension

All dimensions are in mm (± 0.1 mm unless otherwise stated)



Response Characteristic

The figure below illustrates the sensitivity versus concentration relationship prior to linearization. For more details, refer to the Infrared Sensor Application Notes from Clairair Ltd.



Absolute Maximum Rated Parameter

Environmental temperature range: -40°C~ +80°C

Light source power supply voltage (measured between pins 1 and 2):5.1V

Sensor supply voltage (measured between pins 3 and 7):5.5

Operational Notes



Static sensitive equipment

The Cirius series of sensors contains electrostatic sensitive components. Follow anti-static precautions when using the product.

Welding pins can seriously damage the sensor

Sensors can only be connected through the PCB slot.

Recommended slots: Wearnes Cambion reference 450-3326-01-06-00

Function

Unless otherwise specified, all acquired data are based on the following parameters: power supply voltage 5.0V, lamp modulation 0V-5.0V with 50% duty cycle, 3.0Hz frequency, ambient temperature (20°C to 25°C), ambient pressure (995 hPa to 1020 hPa), and nitrogen dilution gas. The airflow rate across the sensor surface is 1 liter per minute.

power dissipation :	150mW (typical)
<Nsp_1> 2 Typical active signals in N:	7.0mV RMS (20mV sine wave between positive and negative peaks equivalent)
2 Typical reference signals in N	3.5mV RMS (10mV sinusoidal curve between positive and negative peaks equivalent)
Temperature output:	3kΩ ± 5% NTC thermistor internally connected to 0V, Beta value 3450K
Percentage of typical voltage drop in the source signal at 5% vol CO ₂	10%
2 at 100% CO vol	35%
Response time (T ₉₀)	< 30s
preheating time :	
Time to normal work	< 30s
Time required for inspection	<30 minutes
nominal range :	0-5%vol methane 0 -100% vol LFL hydrocarbons 0 -100% vol methane
Minimum resolution: at zero point	< 0.5% FS
When in range	<2% FS
mean free error time :	> 5 years
weight :	17.6 g
antiknock characteristics :	Complies with EN61779-1
relative humidity :	0 -95% RH non-condensing
operating temperature range :	-30°C ~ +75°C
working pressure range :	700 ~1300 hPa
Storage temperature range:	-40°C~ +80°C
service voltage :	2.8V~ 5.5V
Light drive voltage range:	2.8V~ 5.0V (50% duty cycle)

深圳市杰晟兴电子有限公司 JM Components Limited

地址: 深圳市福田区中航路7号鼎诚国际大厦南座2007室

手机: 13662266995 马少良 电话: 0755-83951311

官网: cn-sensor.com

邮编: 518031

传真: 0755-83952401

电邮: jackson@jmcomponents.com