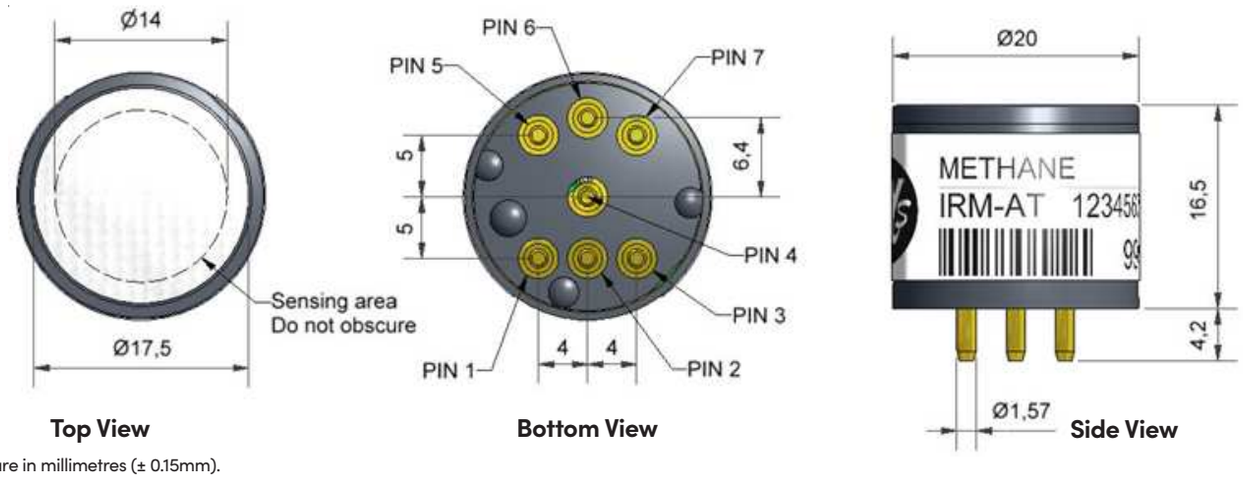
alphasense
AMETEK

Technical specifications Version 1.0

IRM-AT Methane infrared sensor – thermopile detector



Top View **Bottom View** **Side View**

Dimensions are in millimetres (± 0.15mm).

Pin out details:

1. Lamp return
2. Lamp +5V
3. Not connected
4. Detector output
5. Reference output
6. Thermistor output
7. OV supply

Notes:

1. Dimensions without tolerances are nominal
2. Recommended PCB socket: Wearnes Cambion Ltd. code: 450-3326-01-06-00
3. Weight: < 15g
4. Use antistatic precautions when handling
5. Do not cut pins
6. Do not solder directly to pins
7. We suggest this sensor is best used in a fixed site instrument where calibration and measurement can be carried out in-situ, and the sensor is not subject to acute mechanical stress or changes of temperature.

Performance	Maximum power requirements	5.0 VDC, 60mA max. (50% duty cycle source drive)
	Minimum operating voltage	2.0 VDC, 20mA max. (50% duty cycle source drive)
	Source drive frequency	3 Hz typical, 50% duty cycle
	Active/Reference output in air (peak-to-peak)	2 to 4 mV @ 3 Hz, 50% duty cycle
	Typical active signal change for 2.5% CH_4	5% drop (typical) @ 5 V, 3 Hz, 50% duty cycle
	Typical active signal change for 100% CH_4	30% drop (typical) @ 5 V, 3 Hz, 50% duty cycle
	Response time (t_{90})	< 40 s @ 20°C ambient
	Warm-up time	30 minutes @ 20°C, 5 VDC
Lifetime	MTBF @ 5 VDC	> 3 years
Key Specifications	Temperature signal	Integral thermistor (NTC, R_{25} = 100KΩ B= 3940 K)
	Operating temperature range	-20°C to +50°C (linear compensation from 0 to 40°C)
	Storage temperature range	-40°C to +75°C
	Humidity range	0 to 95% rh non-condensing

Range	0 - 2.5%	0 - 100%*
Accuracy	< ± 500ppm	< ± 1% vol
Resolution at zero	< 200ppm	< 300ppm
Resolution at range	< 400ppm	< 2.5% vol
Zero repeatability	< ± 500ppm	< ± 1,000ppm
FS repeatability	< ± 0.1% vol	< ± 2% vol
Limit of detection	< 500ppm	< 1,000ppm

Span coefficient	0.074 - 0.094	1.1 - 1.3 @ 95%
Linearisation coefficient b	0.38	0.025
Linearisation coefficient c	0.98	0.553

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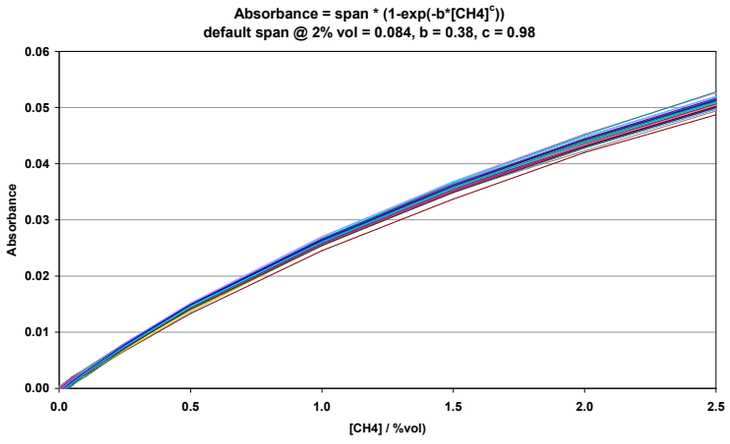
For further information on the performance of this sensor, on other sensors in the range or any other subject, please contact Alphasense Ltd. or visit our website at "www.alphasense.com".

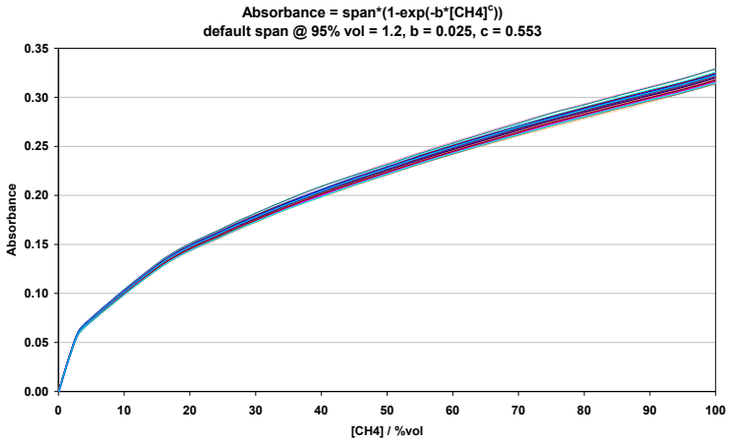
Figure 1 Response up to 2.5% volume methane



Patented optical design gives repeatable and stable absorbancy, following the Beer-Lambert Law.

This allows universal linearisation, not reliant on custom EEPROMs.

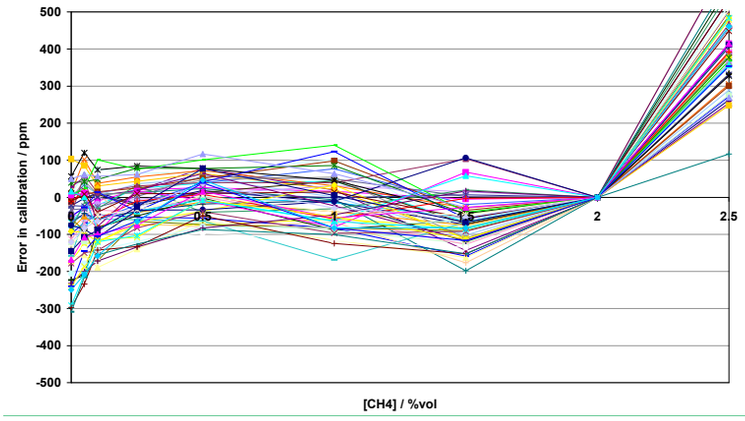
Figure 2 Response up to 100% methane



This NDIR methane sensor responds up to 100% methane but the housing is plastic so is not Ex approved.

However, the sensor could be placed in an Ex approved housing for applications where an explosive atmosphere is present or could develop.

Figure 3 Calibration error to 2.5% methane



Using universal linearisations, the IRC-AT error is less than 0.05% methane.

Zero and 2% methane calibrations are required.

*Note: Due to the incandescent IR source within the sensor, this device should NOT be used for applications where there is a possiblity of the presence or formation of an explosive mixture of methane and/or other flammable gases with an oxidant such as air.

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. NOTE: all sensors are tested at ambient environmental conditions unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their own requirements.