







IRC-AT Carbon Dioxide infrared sensor – thermopile detector

		PIN 6 PIN 5 under the sensing area bo not obscure PIN 1			PIN 4 –PIN 3	s IRC-		34567: 4 9! 4	4	
Top View Dimensions are in millimetres (± 0.15mm).				Side View						
Pin out details:		Notes:								
 Lamp return Lamp +5V Not connected Detector output Reference output Thermistor output OV supply 		 Dimensions without tolerances are nominal Recommended PCB socket: Wearnes Cambion Ltd. code: 450-3326-01-06-00 Weight: 15g Use antistatic precautions when handling Do not cut pins Do not solder directly to pins 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 Minimum operating voltage Source drive frequency Active output in N2 (peak-to-peak) Reference output in N2 (peak-to-peak) Response time (t90) Warm-up time			5.0 VDC, 60mA max. (50% duty cycle source drive) 2.0 VDC, 20mA max. (50% duty cycle source drive) 3 Hz 4 to 7mV @ 3 Hz, 50% duty cycle 2 to 5mV @ 3 Hz, 50% duty cycle < 40s @ 20°C ambient To final zero ± 100ppm: < 30 s @ 20°C To specification: < 30 minutes @ 20°C					
Lifetime		MTBF			> 5 yea	> 5 years				
Key Specifications		Temperature signal Operating temperature range Storage temperature range Humidity range			Integral thermistor (NTC, R ₂₅ = 100KΩ B= 3940 K) -20°C to +50°C (linear compensation from 0 to 40°C) -40°C to +75°C 0 to 95% rh non-condensing					
Туре*	Range (Application)	Accuracy (%FS, using universal linearisation coefficients)	Zero Resolution	Full Scale Resolution	Zero Repeatability	Full Scale Repeatability	Universal lin. coeff. b	Universal lin. coeff. c	Span calibration conc.	
IAQ	0 to 5000ppm (IAQ)	1	10ppm	50ppm	±20ppm	±50ppm	0.000325	0.9363	4000ppm	
	0 to 5 % vial (Safativ)	15	10000	100000	+20000	+5000000	0 5 411	0.6716	4 9/	

* When ordering, select 'IAQ' or 'Other', depending on your application.

0 to 5 % vol (Safety)

0 to 20 % vol (Combustion)

0 to 100 % vol (Process Control)

Other

1.5

2.5

tbc

10ppm

10ppm

10ppm

100ppm

2000ppm

tbc

±20ppm

±20ppm

±20ppm

0.5411

1.0459

tbc

0.6716

0.2932

tbc

4%

16%

100%

±500ppm

±2500ppm

tbc





Instrument Expert Original factory packaging www.dorgean.com



Technical specifications Version 1.0

Figure 1 Beer-Lambert Performance



Typical response from 0 to 5000ppm CO₂. The fit is very close to the theoretical curve, predicted by the Beer-Lambert Law.

Figure 2 Linearisation



Custom linearisation is not necessary with the IRC-AT. Using universal linearisation constants, repeatability between cells is very good, allowing easy implementation.

For an IAQ application, a zero and then single calibration at 4000ppm CO₂ gives the error shown above: typically less than ± 40ppm from 0 to 4500ppm.

Figure 3 Resolution



Excellent resolution and noise at 1000 ppm CO₂ for the IRC-AT is achieved by better design, not by using more expensive components.

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