

**COZIR™**

## Ultra Low Power Carbon Dioxide Sensor

COZIR is an ultra low power ( $3.5\text{mW}^4$ ), high performance  $\text{CO}_2$  sensor, ideally suited for battery operation and portable instruments. Based on patented IR LED and Detector technology and innovative optical designs, COZIR is the lowest power NDIR sensor available. Optional temperature and humidity sensing are available. COZIR is a third generation product from Gas Sensing Solutions Ltd – leaders in IR LED  $\text{CO}_2$  sensing.

With measurement ranges of 0-2000ppm, 0-5000ppm and 0-1% the **COZIR Ambient** Sensor is suitable for applications such as Building Control and Horticulture.

- Ultra-low Power 3.5mW
- Measurement ranges from 0 to 1%
- Low noise measurement (<10ppm)
- 3.3V supply.
- Peak current only 33mA.
- Optional Temperature and Humidity Output



**COZIR™ Ambient Sensor**

## Specifications

General Performance	
<b>Warm-up Time</b>	< 10s. 1.2 secs to first reading.
<b>Operating Conditions</b>	0°C to 50°C (Standard) -25°C to 55°C (Extended range) 0 to 95% RH, non-condensing
<b>Recommended Storage</b>	-30°C to +70°C
CO2 Measurement	
<b>Sensing Method</b>	Non-dispersive infrared (NDIR) absorption Patented Gold-plated optics Patented Solid-state source and detector
<b>Sample Method</b>	Diffusion
<b>Measurement Range</b>	0-2000ppm, 0-5000ppm, 0-1%
<b>Accuracy</b>	$\pm 50$ ppm +/- 3% of reading <sup>1</sup>
<b>Calibration</b>	Autocalibration <sup>6</sup>
<b>Non Linearity</b>	< 1% of FS
<b>Pressure Dependence</b>	0.13% of reading per mm Hg in normal atmospheric conditions.
<b>Operating Pressure Range</b>	950 mbar to 10 bar <sup>2</sup>
<b>Response Time</b>	30 secs to 3 mins (Configurable via filter type and application) <sup>3</sup> Reading refreshed twice per second. <sup>3</sup>



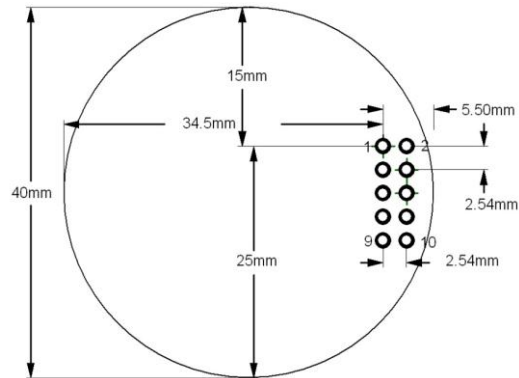
### Electrical/ Mechanical

**Power Input** 3.25 to 5.5V. (3.3V recommended).  
Peak Current 33mA<sup>4</sup>.  
Average Current <1.5mA<sup>4</sup>.

**Power Consumption** 3.5 mW<sup>4</sup>

### Dimensions and Wiring Connections

2x5 0.1" header. view from underside (connector side)



*Note that the drawing shows details of the PCB inside the sensor casing. The outside dimension of the sensor casing is 43mm.*

Function	Pin #	Pin #	Function
GND	<b>1</b>	<b>2</b>	N/C
+3.3V	<b>3</b>	<b>4</b>	N/C
Sensor Rx (in)	<b>5</b>	<b>6</b>	N/C
Sensor Tx (out)	<b>7</b>	<b>8</b>	Nitrogen Zero
Analogue O/P	<b>9</b>	<b>10</b>	Fresh Air Zero

Pin 2 should not be connected. Pins 4 and 6 do not require connection and are internally connected to GND.

The zeroing options are for hardware zeroing (both active low). These functions can also be implemented by sending a serial command (recommended).

Typical connections for digital interface are GND, 3.3V, Rx and Tx. Note that the V<sub>h</sub> for the serial Tx line will be 3V regardless of the supply voltage.

The analog (voltage) output is available only when specified. Otherwise, N/C.



<b>Temperature &amp; Humidity Measurement<sup>5</sup></b>	
Optional Temperature and Humidity sensor (only available as digital output)	
<b>Sensing Method</b>	Humidity: Capacitive Temperature: Bandgap
<b>Measurement Range</b>	-25 to +55 °C 0 to 95% RH
<b>Resolution</b>	0.08 °C 0.08% RH
<b>Absolute Accuracy<sup>5</sup></b>	+/- 1 °C      0°C to 55°C. +/- 3% RH    20°C to 55°C. +/- 2 °C      over the full temperature range. +/- 5% RH    over the full temperature range.
<b>Repeatability</b>	+/- 0.1 °C +/- 0.1 % RH

**Note 1:** All measurements are at STP unless otherwise stated.

**Note 2:** External Pressure calibration required.

**Note 3:** User Configurable Filter Response.

**Note 4:** Power measurements for standard CO2 sensor with 2 readings per second. Temperature and humidity measurements increase the power consumption.

**Note 5:** Temperature and Humidity derived from Sensirion SHT21 chip. Please request data sheet for full details.

**Note 6:** Autocalibration is enabled by default on COZIR-A (after Nov 2012). For correct operation, the sensor must experience fresh air once every week. For details request the application note "COZIR Autocalibration".

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