COZIR™

Ultra Low Power Carbon Dioxide Sensor

COZIR is an ultra low power (3.5mW[4]), high performance CO_2 sensor, ideally suited for battery operation, portable instruments and HVAC. Based on GSS IR LED and Detector technology, and innovative optical designs, the *COZIR* offers the lowest power NDIR sensor available. Optional temperature, humidity and light sensing are available. *COZIR* is a third generation product from GSS – leaders in IR LED CO2 sensing.

- Ultra-low Power 3.5mW
- Measurement ranges from 2000ppm to 1%
- Low noise measurement (<10ppm)
- 3.3V supply.
- Peak current only 33mA.
- Optional Temperature and Humidity Output

Specifications

General Performance

Warm-up Time

•< 10s. 1.2s to first reading.

Operating Conditions

• 0°C to 50°C (standard)
• -25°C to 55°C (extended range)
• 0 to 95% RH, non-condensing

Recommended Storage

• -30°C to +70°C

CO2 Measurement

Sensing Method

• Non-dispersive infrared (NDIR) absorption
• Patented Gold-plated optics
• Patented Solid-state source and detector

Sample Method

• Diffusion

Measurement Range

• 0-2000ppm, 0-5000ppm, 0-1%,
• Extended range (up to 100%) available in COZIR-W family.

Accuracy

• ±50 ppm +/- 3% of reading[1]

Non Linearity

• < 1% of FS

Pressure Dependence

• 0.13% of reading per mm Hg

Operating Pressure Range

• 950 mbar to 1050 mbar[2]

Response Time

• 30 secs to 3 mins (Configurable via filter type and application)[3]
• Reading refreshed twice per second.

Electrical/Mechanical

Power Input

• 3.25V to 5.5V DC
• Peak Current 33mA[4].
• Average Current <1.5mA[4].

Power Consumption

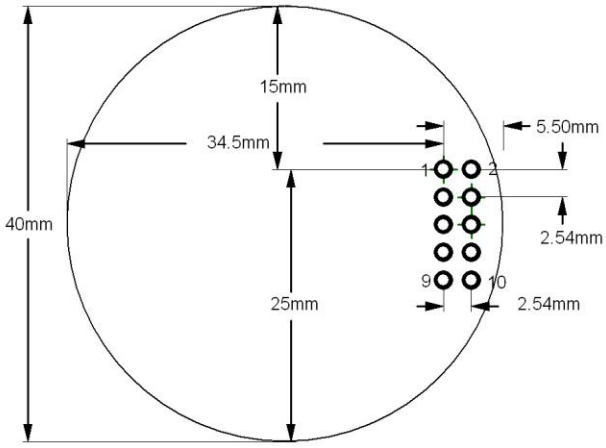
• 3.5 mW[4]

Wiring Connections

• 2x5 0.1" header.

view from underside (connector side)

1	GND	2	N/C
3	3.3V (nominal)	4	N/C
5	Rx	6	N/C
7	Tx	8	Nitrogen Zero
9	Analog (0.1 to 3.3V)	10	Fresh Air Zero



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

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.

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

The serial connection is 9600baud, 8 bit, no parity, one stop bit. There is no hardware flow control. Note that V_{oh} for the serial Rx and Tx lines will be 3V regardless on the supply voltage.

Temperature & Humidity Measurement[5]

Optional Temperature and Humidity sensor (only available as digital output)

Sensing Method

Humidity: Capacitive
Temperature: Bandgap

Measurement Range

- -25 to +55 °C
- 0 to 95% RH

Resolution

- 0.08 °C
- 0.08% RH

Absolute Accuracy[5]

- +/- 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.

Repeatability

- +/- 0.1 °C
- +/- 0.1 % RH

Note 1: All measurements are at STP unless otherwise stated. Assumes correct zero calibration.
Note 2: External Pressure calibration required to eliminate pressure dependence.
Note 3: User Configurable digital filter response. Faster times can be achieved by replacing the membrane filter with a custom filter.
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. See Sensirion data sheet for full details.