Datasheet

GSS
Gas Sensing Solutions

CozIR®-A CO2 Sensor

- Measurement range: 0-2000ppm; 0-5000ppm; 0-1%
- Battery applications
- Low power
- Long lifetime
- Temp & RH%

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Overview

CozIR®-A is a low power CO2 sensor, which makes it ideal for battery powered systems, including portable, wearable and self-powered applications.

Designed for measuring low levels of CO2, the sensor also offers optional temperature and RH% sensing.

CozIR®-A is built on our unique patented LED technology platform and optical designs. It's this solid-state technology that enables best-in-class power consumption, lifetime and durability.

Applications

CozIR®-A is designed for low concentration CO2 environments, with measurement ranges from 0-2000ppm, 0-5000ppm and 0-1%.

The sensor is suitable for battery applications, and systems where low power consumption is required. This includes IoT applications, such as 'smart homes' and 'smart cities'.

Examples of markets where CozIR®-A CO2 sensors are being successfully used:

- **Indoor air quality (IAQ)**
- **Building control**
- **Food packaging**
- **Automotive**
- **Safety**
- **HVAC**
- **Horticulture & agriculture**
- **Instrumentation**
- **Aerospace**

Benefits

- Ideal for low power and battery applications
- Up to 50X lower power than typical NDIR CO2 sensors
- Low maintenance
- Suitable for wireless, portable, wearable and self-powered systems
- Integrates with wireless IoT networks such as ZigBee, Wifi, LoRa, Bluetooth, SigFox and EnOcean
- Supports energy-efficient 'smart buildings' & 'smart homes'

Features

- Low power/energy consumption - 3.5mW
- Measures up to 1% CO2 concentration
- >15 years lifetime
- Optional temperature and RH% sensing
- Solid-state - no moving parts, no heated filaments
- Vibration and shock resistant
- Non-heating
- Self-calibrating[1]
- Digital (UART) and optional analogue (Voltage) output
- RoHS compliant
- Manufactured in the UK

MANUFACTURED IN THE UK

CERTIFIED ISO 9001:2015 COMPANY

RoHS

General performance

Start-up time[2]	1.2 secs
Operating conditions-Temperature	0°C to 50°C (standard) -25°C to 55°C (extended range)
Operating conditions-Humidity[3]	0 to 95% RH, non-condensing
Recommended storage	-30°C to +70°C

CO2 measurement

Sensing method	Patented Solid-state Non-Dispersive InfraRed (NDIR) absorption Solid-state LED and detector Gold-plated optics
Sample method	Diffusion
Measurement range	0-2000ppm 0-5000ppm 0-1%
Accuracy[4]	± (50ppm+3% of reading)
Calibration	Autocalibration[5]
Non-linearity (voltage output)	< 1% of FS
Pressure dependence[6]	0.15% of reading per mbar in normal atmospheric conditions
Operating pressure range[7]	500mbar – 10 bar 900-1100mbar with (T and RH)
Response time (to a step change in gas level)[8]	30 secs - 3 mins

Electrical

Power input[9]	3.25 to 5.5V. (3.3V recommended) Peak Current 33mA Average Current <1.5mA
Power consumption[9]	3.5mW
Connector	2x5 2.54mm header[10] (view from connector/underside)
Communication	UART (standard) Voltage (alternative output)

Warranty

Sensor warranty[11]	1 year

Optional Temperature & RH% Measurement[12]

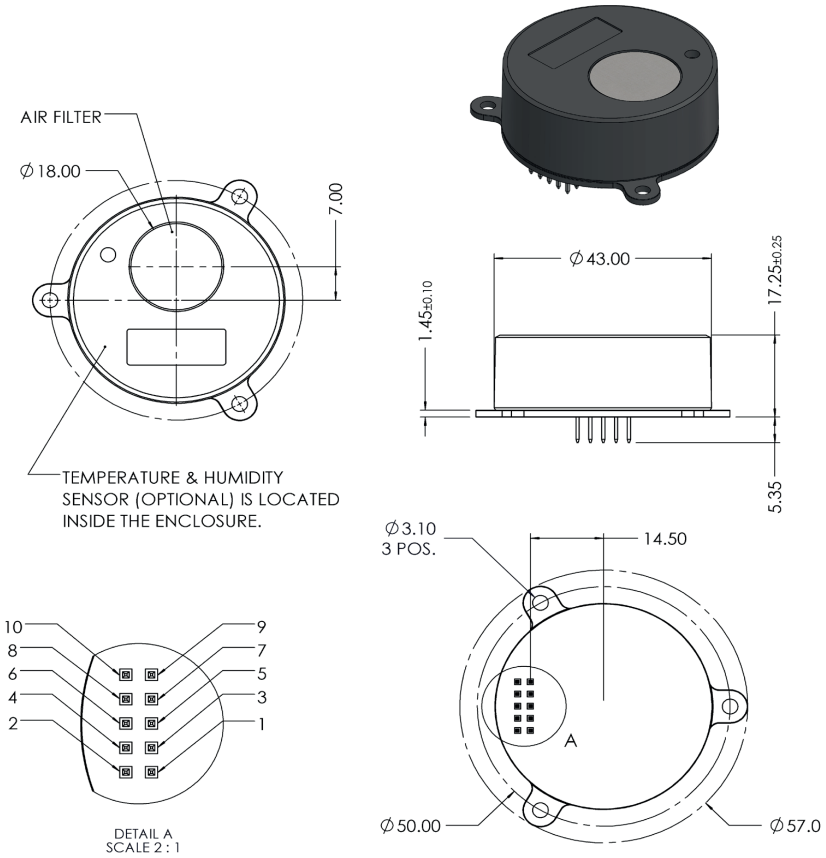
Sensing method	RH%: Capacitive Temperature: Bandgap
Measurement range	25 to +55 °C 0 to 95% RH
Output	Digital only (not analogue)
Resolution	0.08 °C 0.08% RH
Absolute Accuracy	+/- 1 °C 0°C to 55°C. +/- 3% RH 20°C to 55°C. +/- 2 °C over full temperature range +/- 5% RH over full temperature range
Repeatability	+/- 0.1 °C +/- 0.1 % RH

1 Autocalibration is enabled by default.
2 Time to a valid reading is determined by digital filter setting. Typically 4-8 seconds.
3 For extended operation in high temperature and humidity environments, contact GSS
4 All measurements are at NTP unless stated otherwise.
5 For correct operation, the sensor must experience CO2 concentrations close to fresh air at some time in an 8 day period. For further details, please contact us to request our application note on Autocalibration.
6 Calibrated for 1013mbar. External pressure calibration required but our sensors have been tested up to 40 bar.
7 GSS can supply advanced pressure correction advice when operating outside normal atmospheric conditions.
8 Response time to a step change in gas level is dependent on application/filter/flow rate/diffusion.
9 Power measurements for standard CO2 sensor with 2 readings per second. Temperature and RH% measurements increase power consumption.
10 Part no: BF041-10-C-0685-0295-N-G
11 Gas Sensing Solutions Ltd (GSS Ltd) offers a limited one (1) year manufacturer's warranty on its products commencing from the date of original purchase. The warranty is limited to defects in materials and workmanship and does not cover damage or abnormal wear and tear resulting from abuse, misuse, or accidental damage. The warranty excludes operational damage due to exposure to blasts or other threats such as excessive abrasion or flames. Unauthorized repairs or alterations void the product warranty. GSS Ltd cannot and does not assume liability for defective products not manufactured or supplied by it even though such be used in conjunction with products manufactured by GSS Ltd.
12 Temperature and RH% sensing derived from Sensirion SHT21 chip. Please contact us to request the datasheet.

Technical drawings

Technical drawings

CozIR®-A



FUNCTION	PIN #	PIN #	FUNCTION
FRESH AIR ZERO	10	9	ANALOGUE OUTPUT
NITROGEN ZERO	8	7	SENSOR Tx (OUT)
GND	6	5	SENSOR Rx (IN)
GND	4	3	+3.3V
N/C	2	1	GND

NOTE: ONLY ONE GND CONNECTION IS REQUIRED.

Put it to the test

Our evaluation kit contains everything you need to test the sensor for your project requirements. The USB cable allows you to easily connect the CozIR®-A sensor to your PC, for real-time CO2 readings.

- CO2 sensor (including adapter if specified)
- USB connecting cable
- Evaluation guide on USB stick

Please visit our website to request a quote for an evaluation kit.

Technical support

The GSS team are specialists in CO2 sensor design, manufacture and customisation. We can advise how best to integrate our award-winning sensors into your product or process. Whether it's a fixed unit, portable instrument, wearable device, or energy harvester, our engineering team have the experience to help bring your project to life.

For more information about GSS and our technology, please visit our About page.

Custom sensors

If you need the sensor to be altered to your specific requirements, our engineering team can develop a custom solution for you. Please contact us to discuss your project requirements with our engineering department.

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