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Gravity: Analog Electrochemical Carbon Dioxide Sensor (0-10000 ppm)

SKU:SEN0159   Brand:DFRobot   Reward Points: 489

$48.90

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QTY	DISCOUNT
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Quantity:

* Model:

Electrochemical 0-10000 ppm ▾

Infrared 400-5000 ppm (I2C)

Infrared 0-50000 ppm (UART)

Quantity: − 1 +

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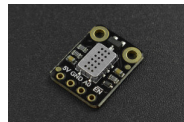
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< (https://www.dfrob 2646.html)) Gravity: I2C SCD41

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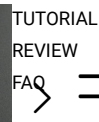
INTRODUCTION

"Greenhouse Effect" is melting the Earth ice core every minute and creating dangerous icebergs. By knowing the exact concentration of CO2(Carbon Dioxide), we can do something to reduce the CO2 and to protect our Earth. Here is the Arduino-based CO2 sensor designed by DFRobot lovely engineer.

This is the first CO2 sensor in the Arduino market. The output voltage of the module falls as the concentration of the CO2 increases. The potentiometer onboard is designed to set the threshold of voltage. As long as the CO2 concentration is high enough (the voltage is lower than the threshold), a digital signal (ON/OFF) will be released.

- It has MG-811 sensor module which is highly sensitive to CO2 and less sensitive to alcohol and CO, low humidity & temperature dependency.
- Onboard heating circuit brings the best temperature for the sensor to function. Internal power boosting to 6V for heating sensor best performance.
- This sensor has an onboard conditioning circuit for amplifying output signal.

To ease the difficulty of using this CO2 sensor, a Gravity (https://www.dfrobot.com/gravity)Interface is adapted to allow plug&play. The Arduino IO expansion shield (https://www.dfrobot.com/product-1009.html) is the best match for this CO2 sensor connecting to your Arduino microcontroller (https://www.dfrobot.com/category-104.html).

This is an electrochemical Arduino-based CO2 sensor, it is suitable for qualitative analysis. DFRobot also developed other Infrared CO2 sensors, which are suitable for quantitative analysis.

1. Gravity: Analog Infrared CO2 Sensor For Arduino (0~5000 ppm) (https://www.dfrobot.com/product-1549.html), high precision, apply to Arduino and other microcontrollers with ADC function.

2. Gravity: UART Infrared CO2 Sensor (0-50000ppm) (https://www.dfrobot.com/product-1565.html), wide range, apply to Arduino (https://www.dfrobot.com/topic-277.html), Raspberry Pi (https://www.dfrobot.com/topic-272.html) and other microcontrollers with UART function.

Gravity CO2 Sensor Selection Guide				
	(https://www.dfrobot.com/product-1023.html)	(https://www.dfrobot.com/product-1549.html)	(https://www.dfrobot.com/product-1565.html)	(https://www.dfrobot.com/product-2646.html)
Product Name	Gravity: Analog Electrochemistry CO2 Sensor	Gravity: Analog IR CO2 Sensor	Gravity: UART IR CO2 Sensor	Gravity: I2C SCD41 Infrared CO2 Sensor (400 - 5000 ppm)
SKU	SEN0159 (https://www.dfrobot.com/product-1023.html)	SEN0219 (https://www.dfrobot.com/product-1549.html)	SEN0220 (https://www.dfrobot.com/product-1565.html)	SEN0536 (https://www.dfrobot.com/product-2646.html)
Operation Voltage	3.7 ~ 5V	4.5 ~ 5.5V	4.5 ~ 5.5V	3.3V-5V
Output	Gravity: Analog (Analog2.7 ~ 4.1V) + 3P Header Digital Output(Alarm):0 ~ VCC Level	Gravity: Analog (Analog Output 0.4 ~ 2V)	Gravity: UART (0 ~ 3.3V Level)	Gravity: I2C
Measurement Principle	Electrochemistry (Solid electrolyte battery principle)	NDIR(non-dispersive infrared)	NDIR(non-dispersive infrared)	photoacoustic NDIR
Measurement Range	0 ~ 10000 ppm	400 ~ 5000 ppm	0 ~ 50000ppm	400 ~ 5000ppm
Accuracy	±100ppm@400ppm	±(100ppm + 6% readings)	±(100ppm + 6% readings)	±(40 ppm + 5% MV)
Response Time	<20s	<90s	<30s	60S
Average Power	<1W	<430mW@5V	<430mW@5V	<30mW@5V
Operation Temperature	-20℃ ~ 50℃	0℃ ~ 50℃	0℃ ~ 50℃	-10℃ ~ 60℃
Operation Humidity	0 ~ 95% RH (No condensation)	0 ~ 95% RH (No condensation)	0 ~ 95% RH (No condensation)	0 ~ 95% RH (No condensation)
Lifespan	>1 year	>5 years	>5 years	>10 years
Dimension (PCB)	32*42 mm	37*69 mm	21*27.1 mm	32*27*8mm
Features	1. Large Range 2. Adjustable Alarm Threshold 3. Fast Response 4. Analog Output	1. High Accuracy 2. Long Lifespan 3. Auto Temperature Compensation 4. Water Vapor Interference Resistance 5. Ananglog Output	1. High Accuracy 2. Large Range 3. Long Lifespan 4. Auto Temperature Compensation 5. Water Vapor Interference Resistance 6. 3.3V UART Output	1.CO2, temperature, and humidity, three in one 2. Small size of 32*27*8mm 3. Low power, average current < 4mA

APPLICATIONS

- Air Quality Control
- Ferment Process Control
- Room Temperature CO2 concentration Detection

SPECIFICATION

- Operating Voltage:5V
- Interface: Gravity Analog
- One digital output
- High-quality connector
- Immersion gold surface
- Onboard heating circuit
- Size:32x42mm (1.26x1.65")

Gravity: Analog Electrochemical Carbon Dioxide Sensor (0-10000 ppm)

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DOCUMENTS

- Product Wiki (https://www.dfrobot.com/wiki/index.php/CO2_Sensor_SKU:SEN0159)
- Schematic (https://image.dfrobot.com/image/data/SEN0159/CO2 Sensor V1 SCH.pdf)
- Layout (https://image.dfrobot.com/image/data/SEN0159/CO2 Sensor V1 Layout.pdf)
- MG811 datasheet (https://image.dfrobot.com/image/data/SEN0159/CO2b MG811 datasheet.pdf)

SHIPPING LIST

- Gravity: Analog Electrochemical Carbon Dioxide Sensor (0-10000 ppm) x1

TUTORIAL

How To Build A Robot - Lesson 6:... (/blog-561.html)
TUTORIALS (/blog-category-tutorials.html)
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DFRobot Gas Sensor Selection... (/blog-1618.html)
SELECTION GUIDE (/blog-category-selection guide.html)
2022-06-25 18:19:45

INTRODUCTION
APPLICATIONS
SPECIFICATION
DOCUMENTS
SHIPPING LIST
TUTORIAL
REVIEW
FAQ

BACK TO TOP

REVIEW

Gravity Projects (https://community.dfrobot.com/tag-524.html)

FAQ

117 Comments

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Jeremy Lim
7 years ago   edited

Is it a must to connect this sensor to the expension shield, instead of directly connected to the arduino UNO rev3?? (require info for project asap)

4   0   Reply   •

DFRobot Support   Mod   → Jeremy Lim
7 years ago

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FAQ

BACK TO TOP