



SPECIFICATION

<Tentative>

Product Name: NDIR CO₂ Sensor

Model No. : POC2021-3

(Customer:)

Date : 2022. 04. 27 .

Approval

Writer	Audit	Approved
JS Choi		JS Choi
2022/04/27		2022/04/27



POC2021-3

Smart NDIR CO₂ Sensor for Indoor Air Quality

1. Description

POC2021-3 is a NDIR(Non-Dispersive Infrared) CO₂(carbon dioxide) gas sensor. It uses infrared wave length of 4.26 micrometer to detect a CO₂ concentration. A single IR lamp and single thermopile sensor are optically arranged by precision optical design. It has high accuracy and long lifetime and optional temperature compensation. It is widely used in Indoor Air Quality monitor, air purifier and building management, automotive, Agricultural HVAC application.

2. Features

Advanced NDIR design

Low cost version for popular application

Lead free and ROHS directive compliant

The detection range of CO₂ 400~5000 ppm

Compact size and Light weight 26.1(W)x 10.1(T)x 19.8(D) mm, 5.7 gram.

3. Interface

UART, 9600 Baud Rate



4. Specification

Parameter	Index	unit
Measurment Range	400~5000	ppm
Resolution	1	ppm
Maximum Consistency Error	$\pm (50\text{ppm}+3\%\text{Reading})$	
Time to first reading	≤ 30	Second (s)
DC Power Supply	Typ:5.0 Min:4.5 Max: 5.5	Volt (V)
Active Current	200mA peak , 25mA average	Milliampere (mA)
Interface Level	L <0.8 @3.3 H >2.7@3.3	Volt (V)
Working Temperature Range	-5~50	°C
Working Humidity Range	0~85% non condensed	
Storage Temperature Range	-40~+85	°C
Life Time	≥ 7	Year (Y)
Physical Size *	33×20×10.5	mm
Pin Gap	2.54	mm

Note1: The physical size is not including the length of Pin



5. UART Interface

5.1. UART, Read measured result of CO2

9,600BPS, 8bit, No parity, 1 stop bit, TTL Level

Request Format

Byte	1	2	3	4
Value	0xF1	0xF2	0x01	0x1C
Description	Start Byte		Command	Check Sum

Response Format

Byte	1	2	3	4	5	6	7	8
Value	0xF1	0xF2	0x02	MSB	LSB	0x00	0x00	CS
Description	Start Byte		Command	CO2 Value		Reserved		Check Sum

ex) 451ppm → 0xF1 - 0xF2 - 0x02 - **0x01** - **0xC3** - 0x00 - 0x00 - 0x57
Hex, 0x1C3 = Decimal, 451

5.2. Calibration of CO2 Concentration

Request Format

Byte	1	2	3	4	5
Value	0xC1	0xC2	0xC6	MSB	LSB
Description	Start Byte		Command	CO2 Target Value	

Response : 0xD1 - 0xD2 - 0xC6 - 0x00



5.3. Change the ABC Cycle (Days)

Request Format

Byte	1	2	3	4	5
Value	0xFF	0xAB	0xC3	days	0xC4
Description	Start Byte		Command	ABC cycle	—

Response : 0xFF - 0xAB - 0xC3 - days - C4
(ABC default:15days(Hex : 0F), 3~30days, 0: ABC Close)

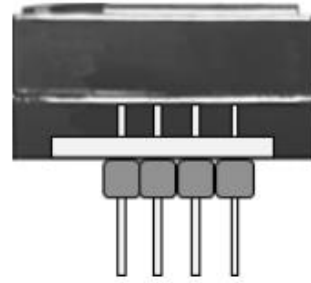
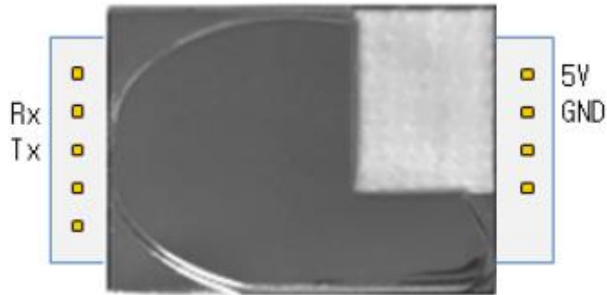
5.3.1. ABC Cycle confirm

Request Format : 0xFF - 0xAB - 0xC2 - 0xAB - 0xC3

Response Format : 0xFF - 0xAB - 0xC2 - days - C0
(ABC default:15days, 0: ABC Close)



6. I/O Connector Pin Out



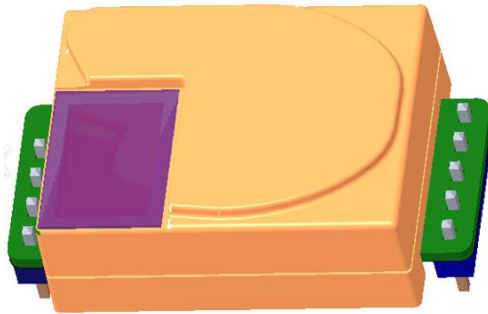
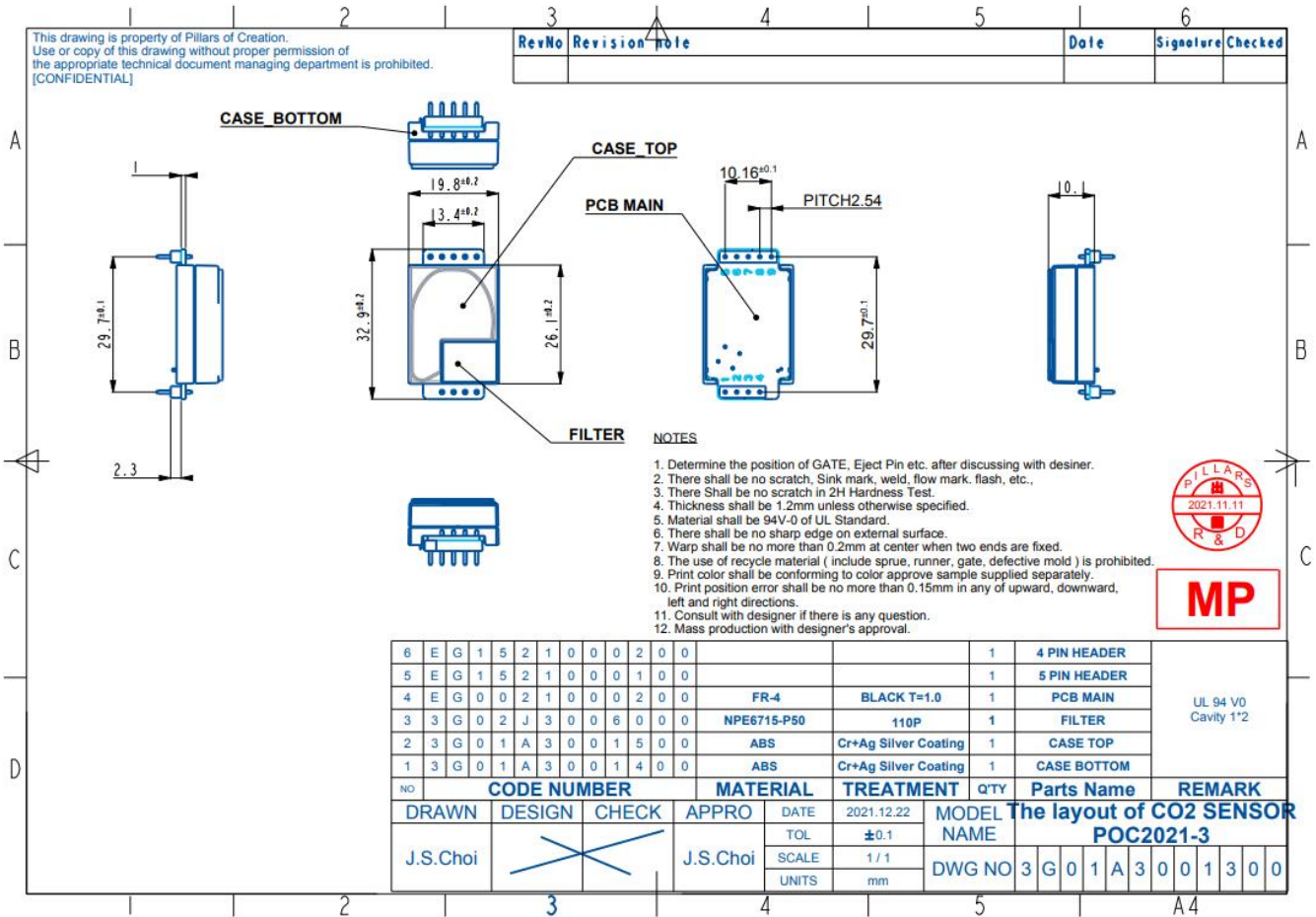
Pins

Pin	Definition
Vin	5V (Power)
GND	GND
Rx	UART(RXD) data input
Tx	UART(TXD) data output



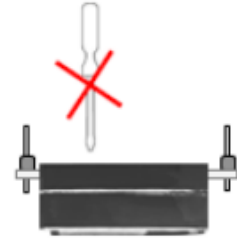
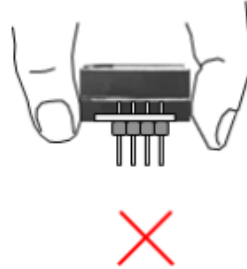
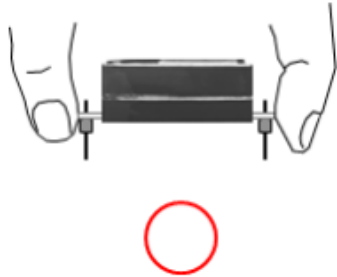
7. Outline Dimension

7.1 Sensor Dimension





8. Handle with care



■ Document Revision Table

Document No	Version	Date	Changed Content	Page
ED-N-DS-20220314	Rev 1.0	2022.03.14	Original	
ED-N-DS-20220427	Rev 2.0	2022.04.27		

-This is the end of document. -