



# SPECIFICATION

<Tentative>

**Product Name: NDIR CO<sub>2</sub> Sensor**

**Model No. : POC2021-3**

**(Customer: )**

**Date : 2023. 03. 14.**

**Approval**

<b>Writer</b>	<b>Audit</b>	<b>Approved</b>
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<b>2022/03/14</b>		<b>2022/03/14</b>



# POC2021-3

## Smart NDIR CO<sub>2</sub> Sensor for Indoor Air Quality

### 1. Description

POC2021-3 is a NDIR(Non-Dispersive Infrared) CO<sub>2</sub>(carbon dioxide) gas sensor. It uses infrared wave length of 4.26 micrometer to detect a CO<sub>2</sub> 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 CO<sub>2</sub> 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	$\leq 30$	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	$\geq 7$	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

UART

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

### Protocol Format

#### 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		-		Check Sum

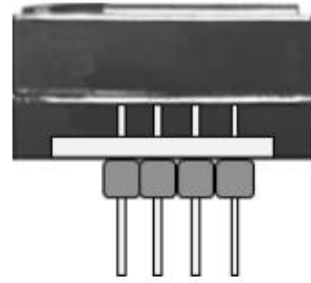
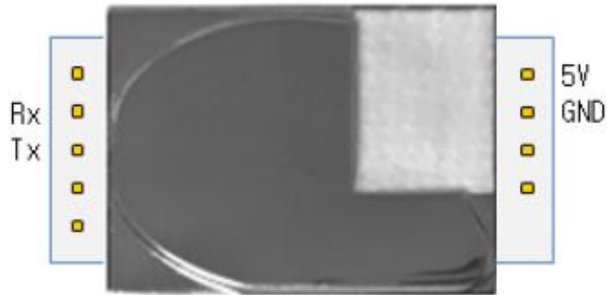
Ex) 451 ppm -> 0xF1 - 0xF2 - 0x02 - 0x01- 0xC3 - 0x00 - 0x00 - 0x57

Hex, 0x1C3 = Decimal, 451

Checksum = (NOT (Byte1+Byte2+Byte3+Byte4+Byte5+Byte6+Byte7))+1



## 6. I/O Connector Pin Out



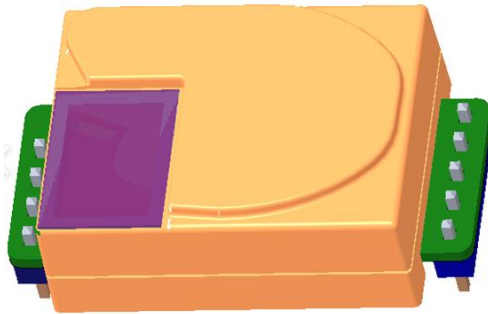
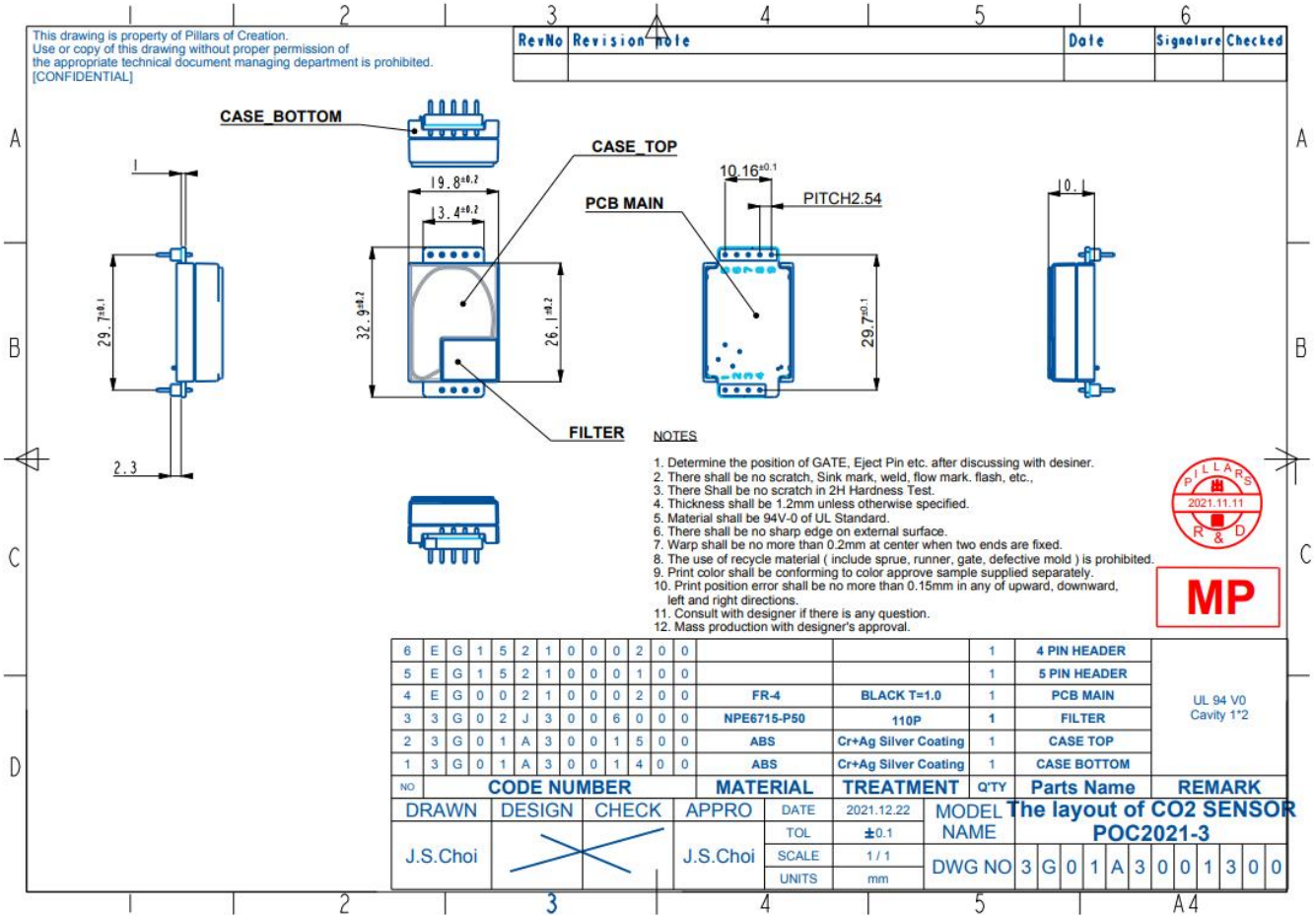
### Pins

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



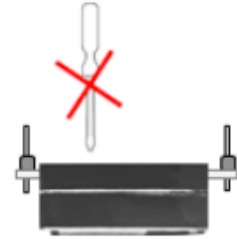
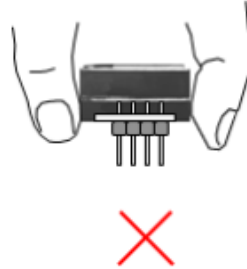
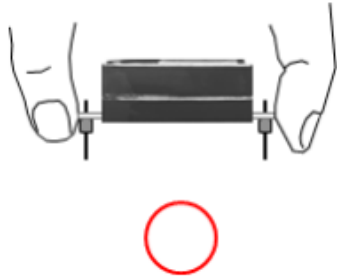
## 7. Outline Dimension

### 7.1 Sensor Dimension





## 8. Handle with care



## ■ Document Revision Table

Document No	Version	Date	Changed Content	Page
ED-N-DS-211222	Rev 1.0	2022.03.14	Original	

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