ZG07 series CO2 Module

User Manual

Contents

1 General Description

This document describes the user guide of ZG07 Series.

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2 Features of Design

ZyAura, a world class leader and supplier of IR sensor technology and temperature measurement devices, is pleased to introduce a new CO2 monitor for use in scientific, commercial, and consumer applications. The ZG07 is a new and low-cost carbon dioxide monitor implementing IR-SoC technology; it can accurately detect carbon dioxide levels between 0 to 10,000 ppm. This gas monitor is suitably fit for applications in Indoor Air Quality (IAQ), HVAC, safety, and other industries.

3 Specification

Method: Dual Beam NDIR
Sample Method: Diffusion or flow through (50~200ml/min)
Operating Conditions: 0~50°C (32~122° F) 0-95% RH, non-condensing
Storage Conditions: -20~60°C (-4~140°F), 0-95%RH, non-condensing

■ **Performance - CO2 Channel**

	ZG07	ZG07-M	ZG07R
CO2 range (ppm)	0-3,000	0-10,000	0-3,000
CO2 Accuracy	±50ppm or 5% of reading		
Repeatability	±20ppm		
Resolution	1ppm		
Pressure Dependence	0.13% of reading per mm Hg		
Response Time	About 2 min		
Warm Up Time	30 sec. @ 25°C		

■ **Performance – Temperature and RH**

	ZG07	ZG07-M	ZG07R
Temperature range	0-50°C(32-122°F)		
Temperature Accuracy	±1°C(±2°F) When the fan blows to the device directly, the accuracy of temperature is ± 1.5 °C.		
Relative Humidity Range (RH%)	N/A	N/A	0-100%
Relative Humidity Accuracy(Typ./Max.) @25°C (20%~80% RH)	N/A	N/A	±3% / ±5%

■ **Power Supply and Output**

Power Supply	5.0 VDC ±0.5 supply, Ripple and Noise (mVp-p) 200
Max. current	<180 mA
Avg. current	<30mA (ZG07/ZG07-M) , <17 mA (ZG07R)
Update period	2 sec (ZG07/ZG07-M) , 5 sec (ZG07R)
Output Interface	4pin Vertical Connector, Space=2.54mm
Communication type	SPIr

■ Dimension: 62mm × 20mm × 13.0mm (ZG07/ZG07-M)
62mm × 20mm × 16.0mm (ZG07R)

Pin Assignment of ZG07

Warning: The Dimension in this drawing is for reference only.

V: Vdd **G**: GND

D: Data (Serial Data) **C**: Clock (Serial Clock)

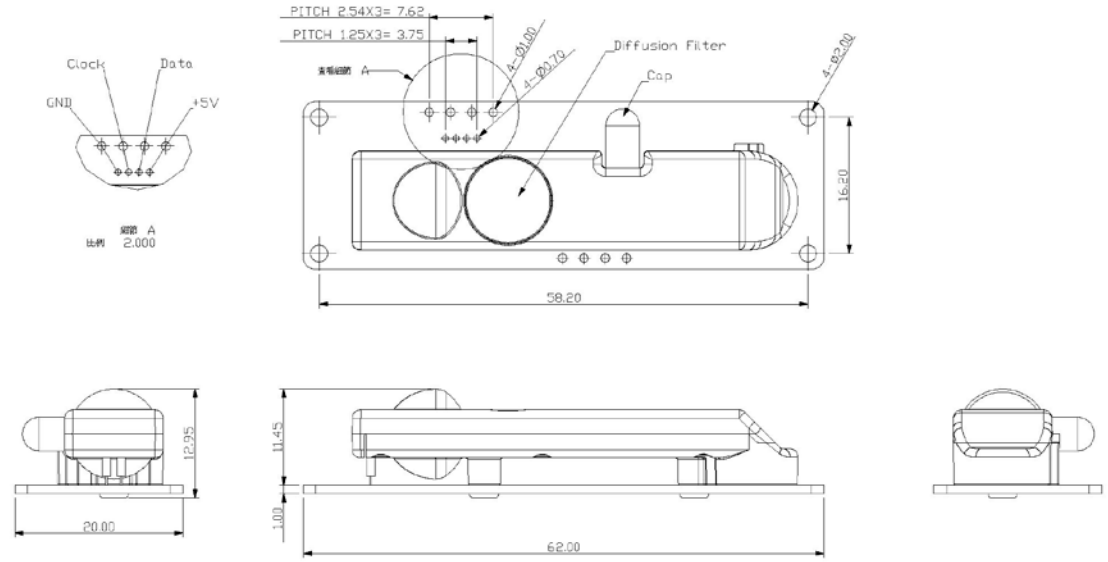

Fig1. The Module External Drawing ZG07/ZG07-M

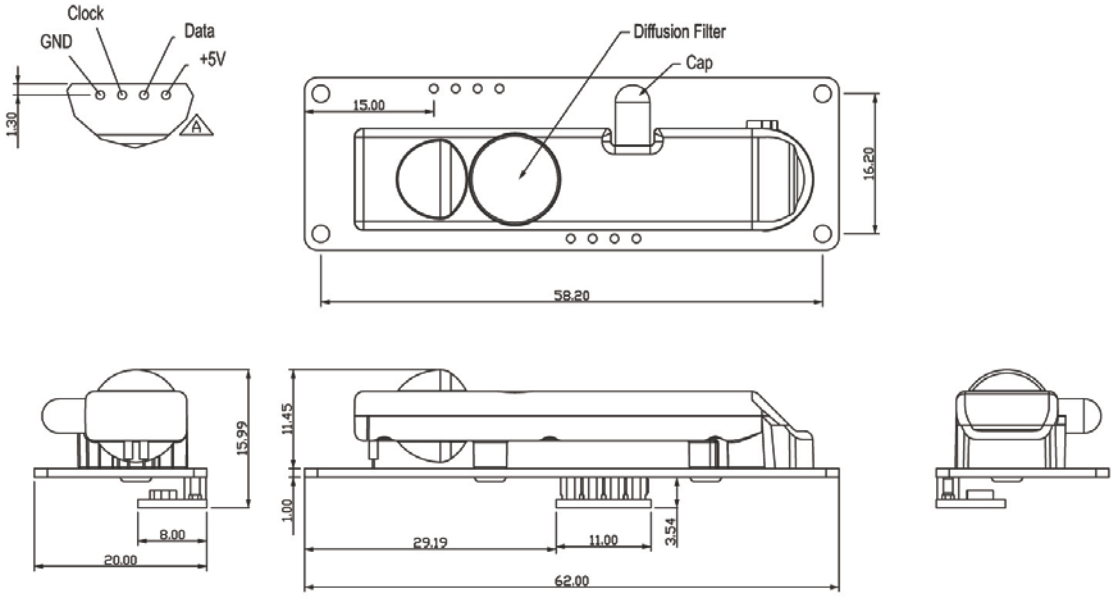

Fig2. The Module External Drawing ZG07R

3.1 Timing of SPIr

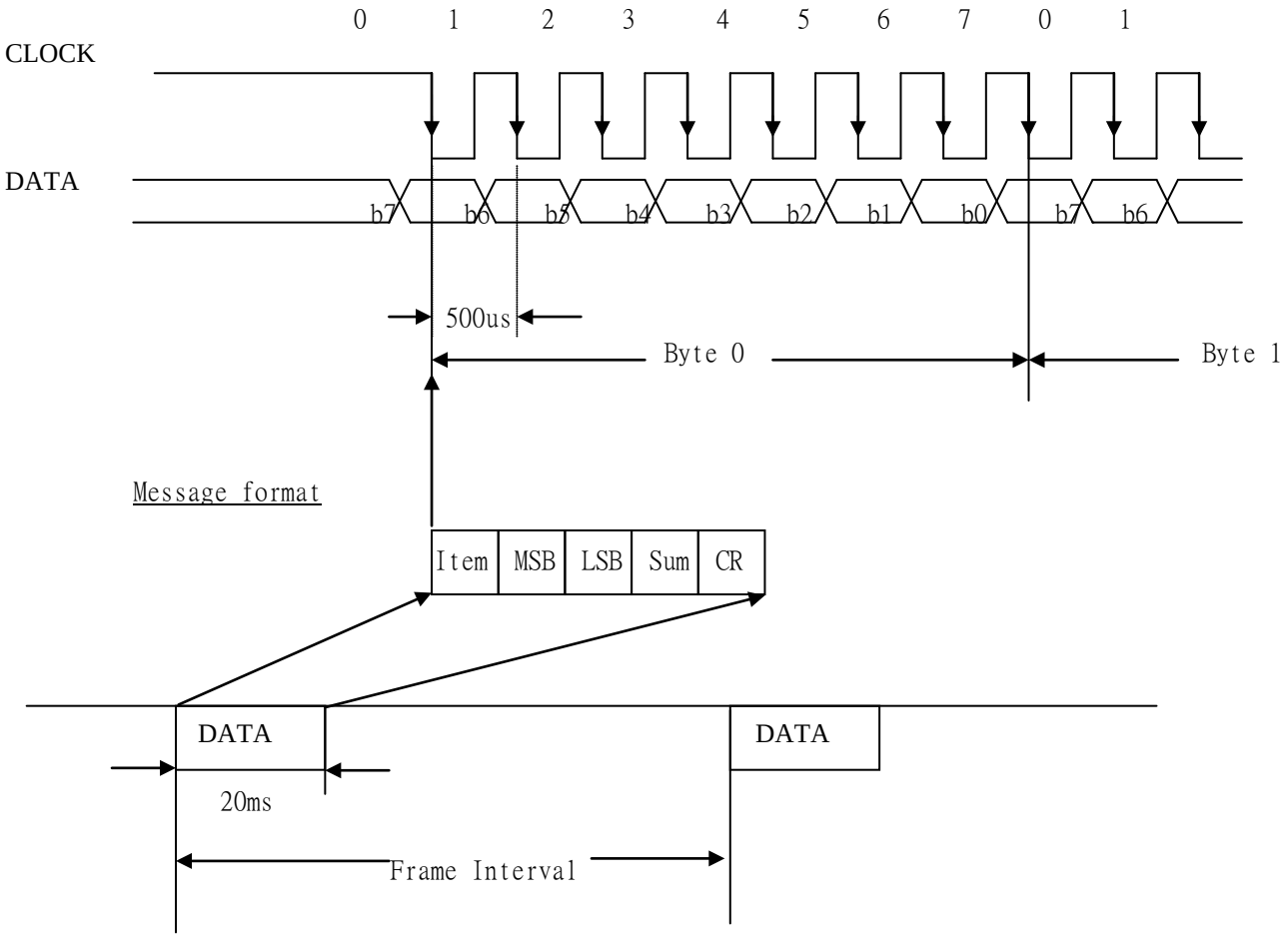

Fig3. Timing of SPI

3.1.1 Format of Message

Item	MSB	LSB	Sum	CR

Item "B" (42h): Tobj (Temperature of Obj)
MSB 8 bit Data Msb
LSB 8 bit Data Lsb
Sum Item+MSB+LSB=SUM
CR 0Dh, End of the message

The SPIr output format: Hex format
Below is Hex format output:

Co2 Output:

50	02	58	AA	0D

Item 50h→ "P" the item code of CO2 concentration
Data MSB 02h
LSB 58h
Real CO2 concentration 600ppm
Sum CheckSum 50h+02h+58h=AAH (Only Low Byte)
HexToDec (0258H) =600
CR 0Dh →'Carriage Return' means End of Message

Temp Output:

42	12	82	D6	0D

Item 50h→ "B" the item code of Temp concentration
Data MSB 12h
LSB 82h
Real Temp value is 23℃
HexToDec (1282H) =4738; 4738/16-273.15=23
Sum CheckSum 42h+12h+82h=D6H (Only Low Byte)
CR 0Dh → 'Carriage Return' means End of Message

RH Output: (ZG07R only)

41	17	7F	D7	0D

Item 41h→ "A" the item code of Temp concentration
Data MSB 17h
LSB 7Fh
Real RH value is 60.15%
HexToDec (177FH) =6015; 6015/100=60.15
Sum CheckSum 41h+17h+7Fh=D7H (Only Low Byte)
CR 0Dh → 'Carriage Return' means End of Message