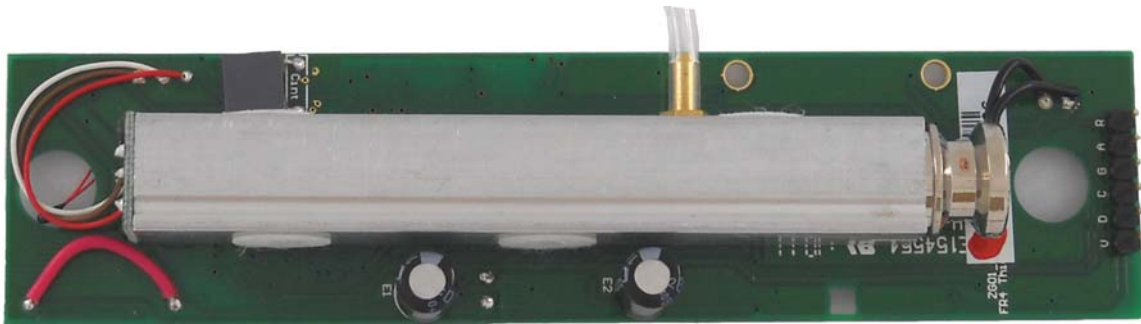


ZG01 CO2 Monitor Module

User Manual



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1 General Description

This document describes the user guide of ZG0 Series (ZG01).

Edition 01/12/2011

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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 ZG01 is a new and low-cost carbon dioxide monitor implementing IR-SoC technology; it can accurately detect carbon dioxide levels between 0 to 3000 ppm. This gas monitor is suitably fit for applications in Indoor Air Quality (IAQ), HVAC, safety, and other industries.

3 Specification

Measurement Method	NDIR
Sample Method	Diffusion or flow through (0.05~0.2l/min)
Measurement Range	0~3000ppm/0.3%
Operating TempRange	32 to 122° F (0-50°C) 0-95% RH,non-condensing
Storage Range	-20~60C,95%RH
■Accuracy	
CO2 Accuracy	+/-50ppm or 5% of reading
Ambient Temperature Accuracy	+/-1.0°C
Calibration Interval	12 months, offset adjustment using single gas at 0-1000 ppm CO2 under UcaliMode.
Pressure Dependence	0.13% of reading per mm Hg
Repeatability	20ppm
Resolution	1ppm
■Outputs	
Output Interface	6pin Vertical Connector, Space=2.54mm
Digital Output	CO2 & Tamb in ZyAura Protocol
OC (Open Collector)Output	Fixed setpoint, factory set at 1000 ppm, 50 ppm hysteresis
■Power Supply	
AC/DC Supply	5V-9VDC
■Warm Up & Response	
Response Time #R1 (63% Rise Time)	<2min
Warm Up Time(CO2)	<60 sec
Update Period	7 sec
Warm Up Time(Ambient Temp)	20~30min
Dimension	118x28x20mm (4.65x1.10x0.79 inch)
Weight	49g (1.73 oz)without attachment

Pin Assignment of ZG01

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

V: Vdd

G: GND

D: Data (Serial Data)

C: Clock (Serial Clock)

OC: Open Collector

R: Reset

ZG01 Module External Drawing

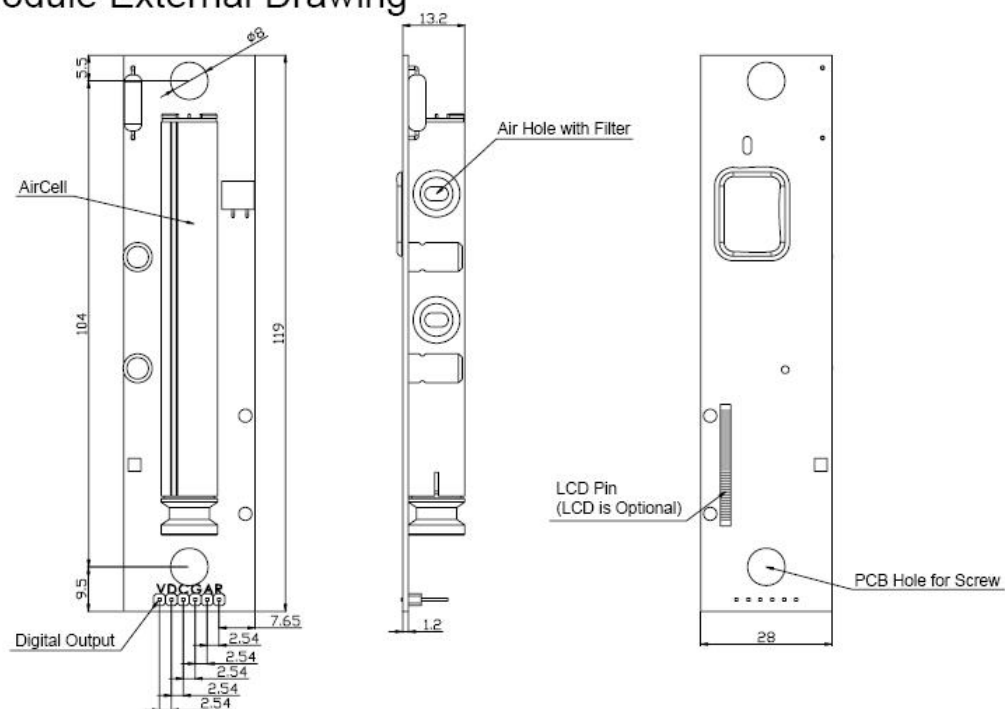


Fig1. The Module External Drawing

4 Serial Output

4.1 Typical Diagram

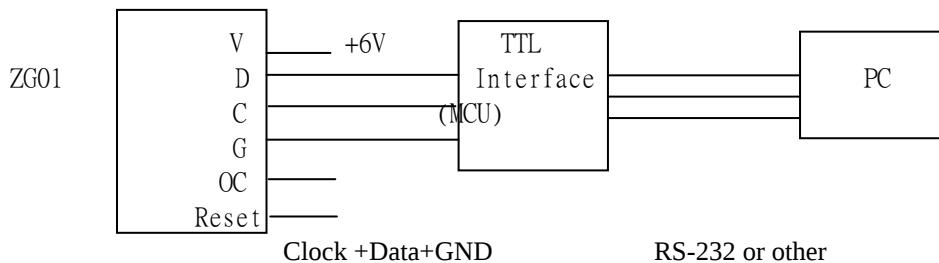


Fig2. Typical Diagram

ZG01 to TTL Interface (MCU)

V:Vcc

D:Data

C:Clock (2KHz)

G:GND

OC: Open Collector

Reset: Restart the device

Note: Data Pin is High when there is no data out, Time Out > 2ms

4.2 Timing of SPI

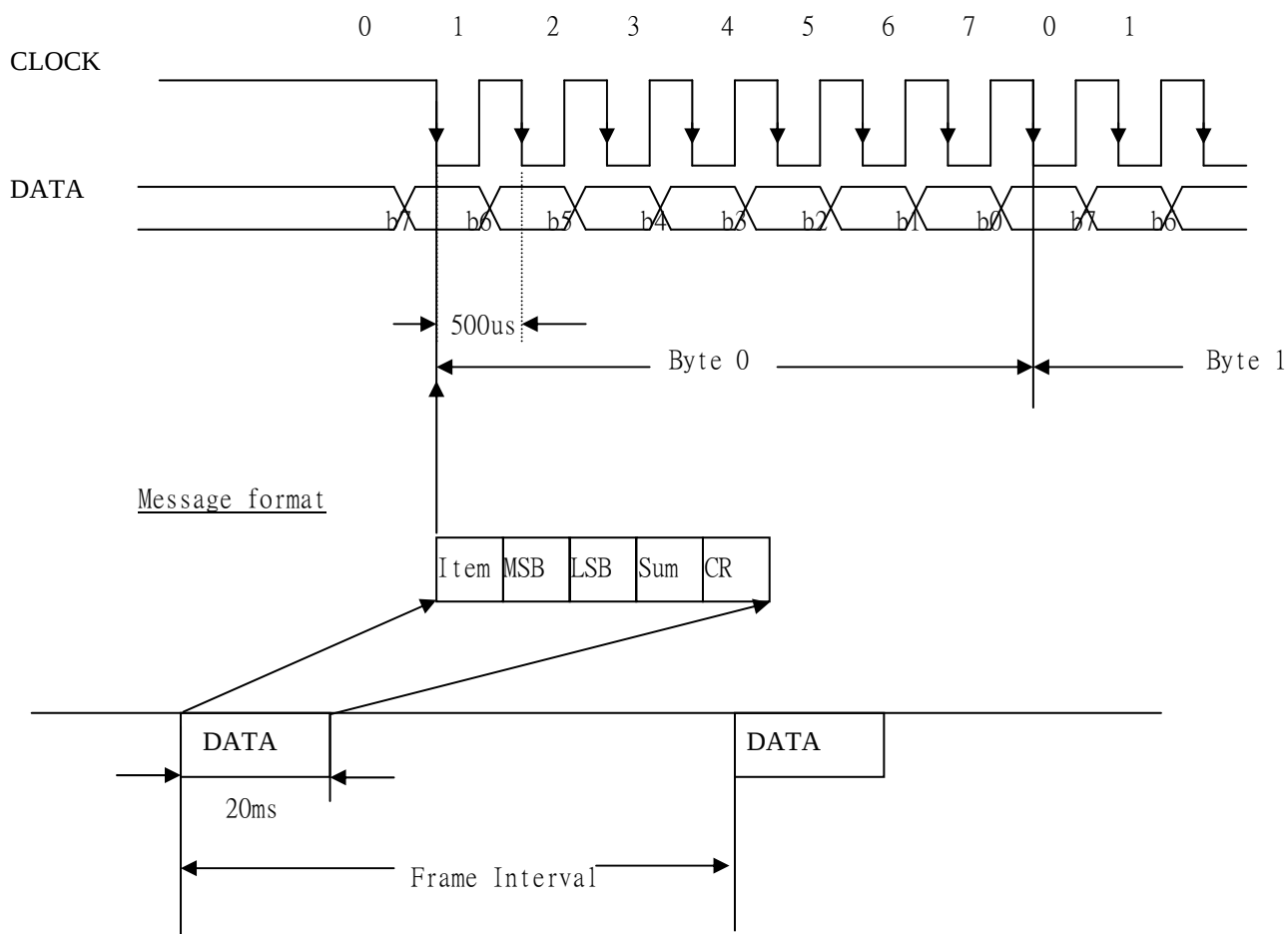


Fig3. Timing of SPI

4.2.1 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

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°C
 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

5 Interface Demo Board: ZGhub

General Description:

ZGhub is an Interface box with LCD, for ZG0mseries.

This Box can work as an interface between the CO2 monitor module and PC. See Fig.5

“ZGhub” has a 2-column character type LCD Display, it can also work without the PC.

The Hub will show CO2 & Tamb (data from the ZG0m) continuously.

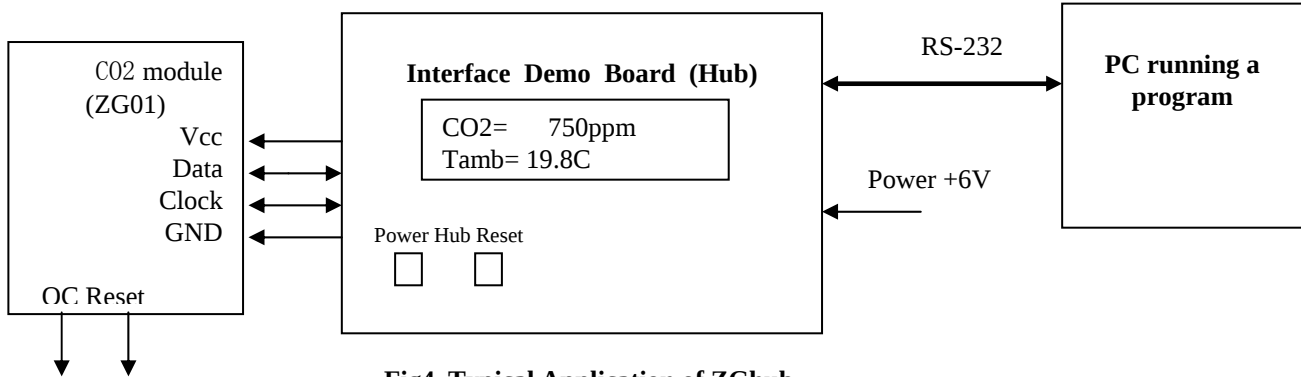


Fig4. Typical Application of ZGhub

Model No:ZGhub



Fig5.ZGhub

6 ZGview: Interface Program for PC

Program: ZGview

A Free version for demonstration can be downloading at <http://www.zyaura.com/support/default.asp>

- Running under Window operating system
- Must be used accompanied with ZGhub
- This program will show the curve of :
CO2 (ppm); Tamb (degC) continuously
- Modification of the setting ,such as Alarm Level

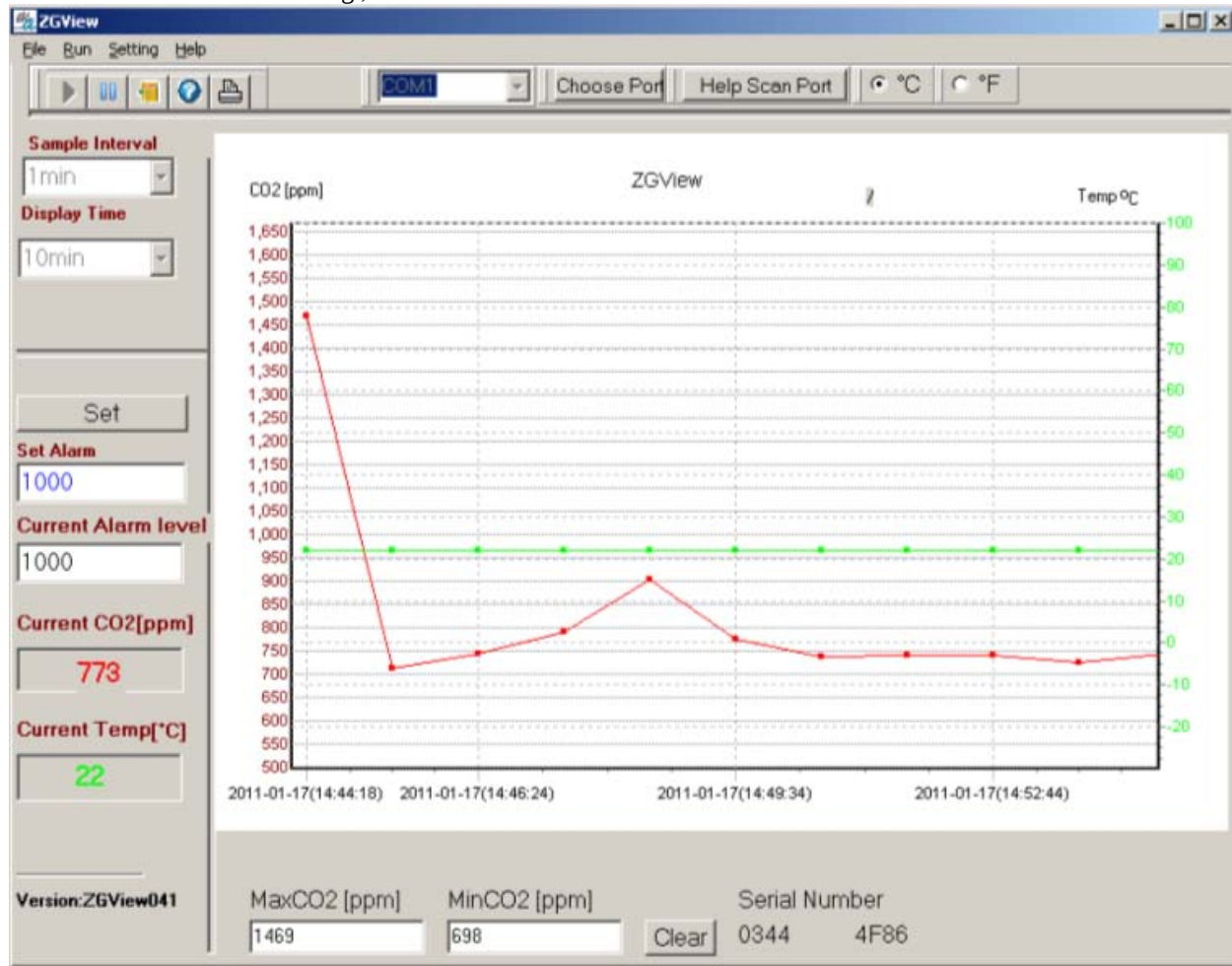


Fig6.ZGview Window