

ZG106 Series CO2 Monitor

Engineering Support

Preliminary Version April.24 2008

www.ZyAura.com

Contents

1 GENERAL DESCRIPTION	2
EDITION APRIL 2008.....	2
2 FEATURES OF DESIGN	2
3 PHYSICAL INTERFACE OF ZG106 SERIES	2
PIN ASSIGNMENT OF ZG106	2
4 SERIAL OUTPUT	3
4.1 TYPICAL DIAGRAM	3
4.2 TIMING OF SPI	3
4.2.1 <i>Format of Message</i>	4
4.2.2 <i>Example</i>	4
5 INTERFACE DEMO BOARD: ZGHUB	5
6 ZGVIEW: INTERFACE PROGRAM FOR PC	6

1 General Description

This document describes the user guide of ZG Series (ZG106,ZG106AM,ZG106AH).

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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 ZG106 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 Physical interface of ZG106 series

Pin Assignment of ZG106

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

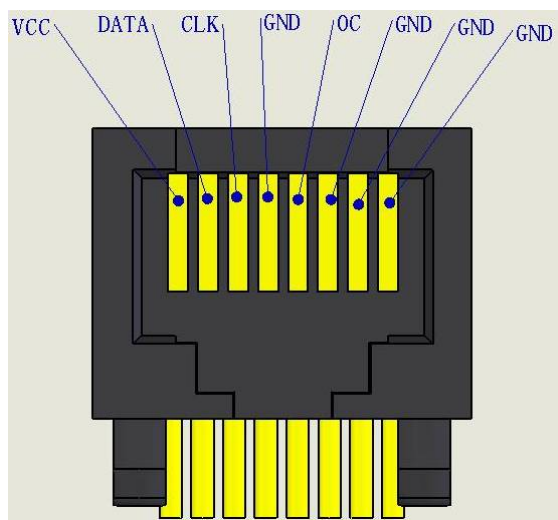


Fig.1 RJ45 inner definition

4 Serial Output

ZG106 series outputs the serial data in SPIr format . it is not the standard SPIr format .
Please see 4.2 , Timing of SPIr.

4.1 Typical Diagram

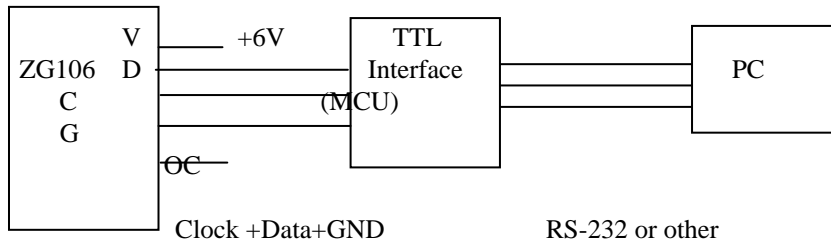


Fig 2. Typical Diagram

ZG106 to TTL Interface (MCU)

- V: Vcc
- D: Data
- C: Clock (2 KHz)
- G: GND
- OC: Open Collector

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

4.2 Timing of SPIr

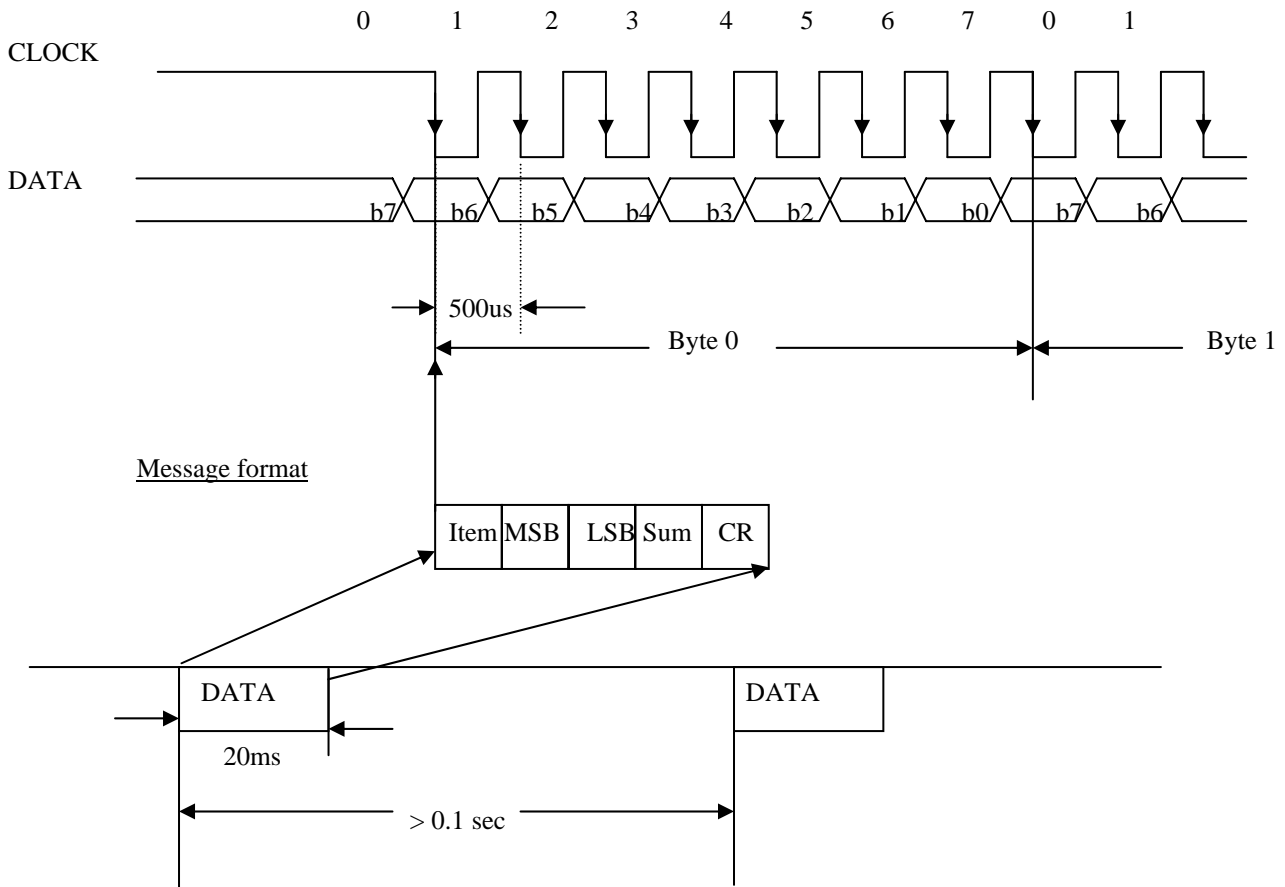


Fig 3. Timing of SPI

4.2.1 Format of Message

Item	MSB	LSB	Sum	CR
------	-----	-----	-----	----

Item "P" (50h): CntR (CO2 concentration)

MSB 8 bit Data Msb

LSB 8 bit Data Lsb

Sum Item+MSB+LSB=SUM

CR 0Dh, End of the message

Note: for the Firmware version := 2101,2102 , the MSB and LSB are BCD

For Firmware version :=2103 , the MSB and LSB are Hex format

4.2.2 Example :

How to judge the Firmware version?

Z	21	03	Sum	0D
---	----	----	-----	----

The data following the ItemCode "Z" shows the version of Firmware.

Z2103 means the Firmware version is 2103

Z2102 means the firmware version is 2102

If Firmware version=2101,2102

1. Relative Concentration of CO2 (CntR)

50	10	00	60	0D
----	----	----	----	----

Item 50h → "P" the item code of CntR

Data MSB 10h

LSB 00h

Relative Concentration of CO2 = 1000ppm

Sum CheckSum 50h+10h+00h=60H (Only Low Byte)

CR 0Dh → 'Carriage Return' means End of Message

2. Object Temperature (Tamb)

42	27	03	6C	0D
----	----	----	----	----

Item 42h → "B" the item code of Ambient temperature

Data MSB 27h

LSB 03h

Real Temperature Value [2703]/100= 27.03 °C

Sum CheckSum 42h+27h+03h=6Ch (Only Low Byte)

CR 0Dh → 'Carriage Return' means End of Message

If Firmware version=2103

3. Object Temperature (Tamb)

42	12	C3	17	0D
----	----	----	----	----

Item 42h → "B" the item code of Ambient temperature

Data MSB 12h

LSB C3h

Real Temperature Value [Hex2Dec (12C3h)]/16-273.15= 27.03 °C

Sum CheckSum 42h+12h+C3h=17h (Only Low Byte)
CR 0Dh → 'Carriage Return' means End of Message

4 Relative Concentration of CO2

50	3A	98	22	0D
----	----	----	----	----

Item 50h → "P" the item code of CO2 concentration
Data MSB 3Ah
 LSB 98h
 Real CO2 concentration 15000ppm
Sum CheckSum 50h+3Ah+98h=AAH (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 ZG mseries.

This Box can work as an interface between the CO2 monitor module and PC. See Fig.4

"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 ZG) continuously.

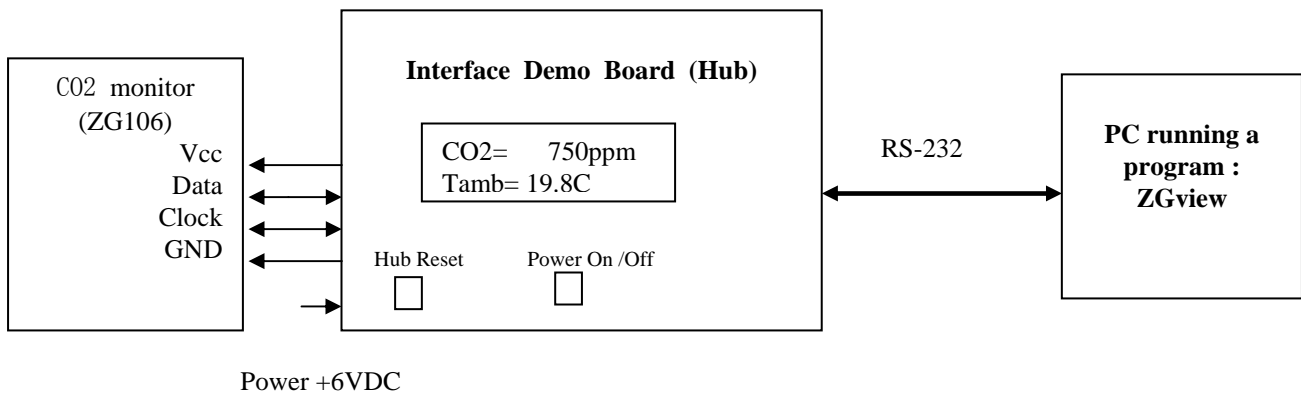


Fig 4. Typical Application of ZGhub

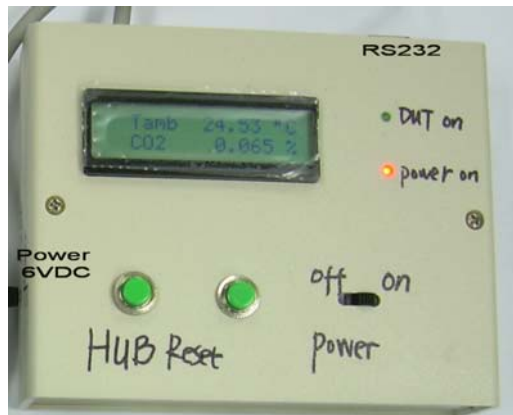


Fig 5. ZGhub

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

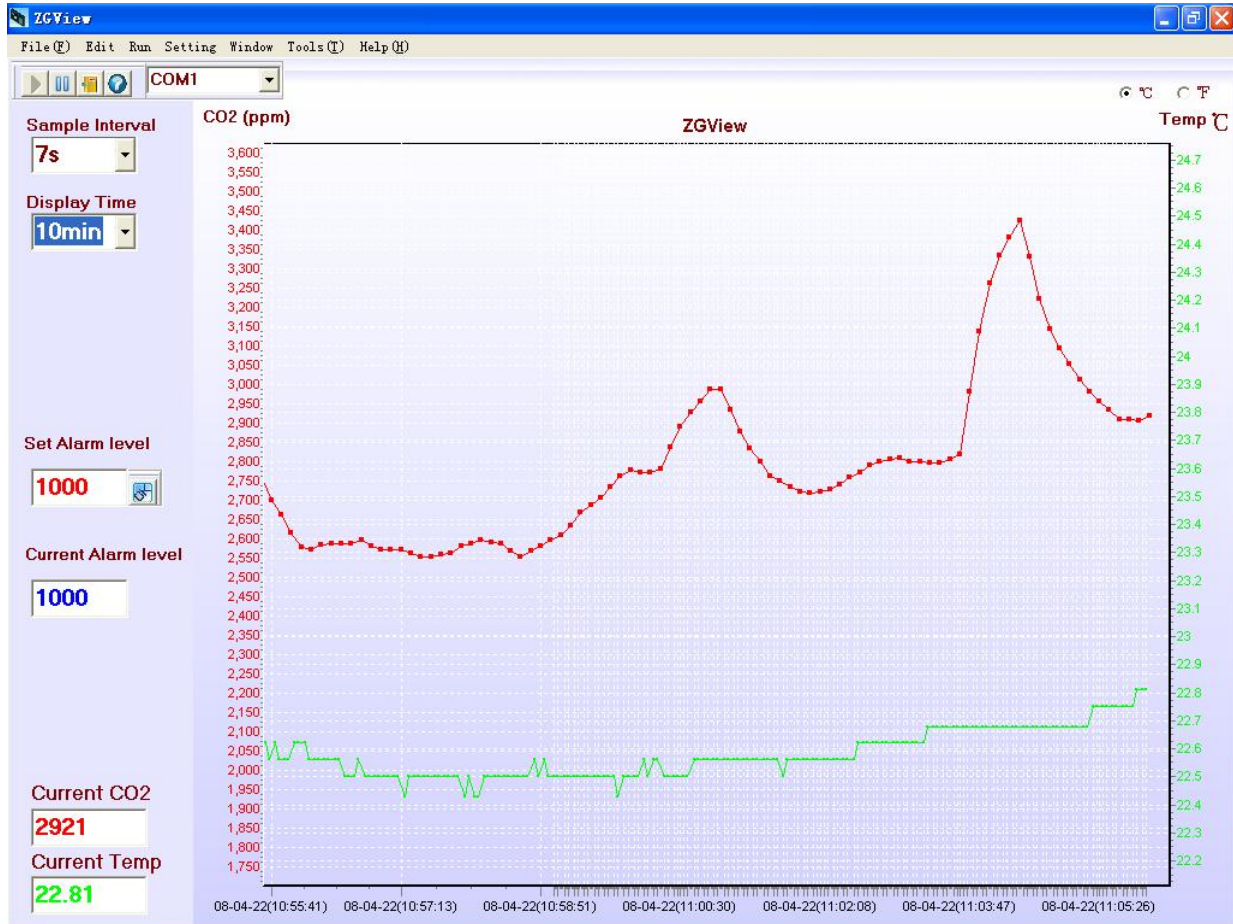


Fig.6 ZGview Window