

Wall Mount CO2 Monitor Operating Instructions

Model: ZGw19

Product Overview

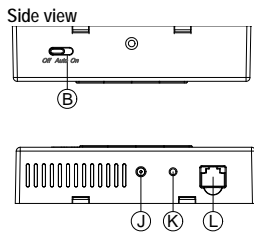
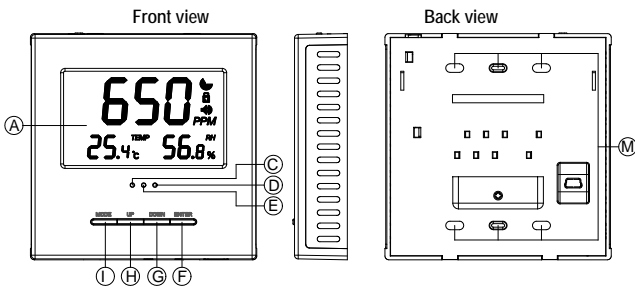
Thank you for selecting this CO2 wall mount monitor. This product was developed to detect the presence of CO2 in the ambient air and help people to take care of the IAQ (Indoor Air Quality). The compact device is designed for use in HVAC in the building, also the greenhouse with the CO2 concentration control.

By using the CO2 monitor as the indicator, it can easily get the current CO2 concentration together with the relative humidity and temperature. The CO2 monitor can be widely used in the office building, green house, school, exhibition, shopping mall.

The CO2 monitor is easy to use and has many features:

- Dual Beam NDIR (Non-Dispersive-Infrared) technology used to measure CO2 concentration.
- Three different LED display show the current Indoor Air Quality situation.
- Linear analog output (0-10V Voltage, 4-20mA Current) and Relay output based on CO2 Level.
- Reliable Sensor provides long-term calibration stability.
- The visual and audible alarm function can be adjustable by user.
- Mounting bracket with terminal block provides quick easy installation.

Operation Instruction



- A. Main LCD Display
- B. Power Switch
- C. Green LED Display
- D. Yellow LED Display
- E. Red LED Display
- F. Enter Button
- G. Down Button
- H. Up Button
- I. Mode Button
- J. Power Inlet
- K. Gas Entry Hole
- L. RJ 45 Socket (For factory use only)
- M. Screw Position

* RJ 45 Socket including the RS232 and analog output, Power Inlet is used for factory testing only, and when using 6VDC, the LCO and LVO will not work.

Power Switch Function: When switch is "ON", relay output is always closed; when switch is "AUTO", relay output is controlled by user; when switch is "OFF", it means the device is power off.

LCD Display Symbol

Symbol	Meaning	Description
	CO2 Concentration PPM Parts Per Million	The current CO2 concentration in household, greenhouse, school, hospital, exhibition, shopping mall and other office or commercial buildings.
	Alarm	The Alarm Setting Icon, the factory setting with alarm is buzzer off
	Calibration	To calibrate the CO2 sensor when the accuracy deviates from the actual CO2 concentration
	Alarm Level 1	Under HVAC mode, Relay status will invert, the Buzzer and Yellow LED will work; Under Greenhouse mode, Yellow LED will work.
	Alarm Level 2	Under Greenhouse mode, Relay status will invert, the Buzzer and Green LED will work. Under HVAC mode, Red LED will work.
	Recover Factory Setting	To Recover Factory Setting to cancel the customized setting
	Lock Icon	"ON" means No key response
	BLANK	To disable some part content of display on the LCD.

Safety Instruction

Warning: Your safety is very important to us. To ensure you use your product correctly and safely, we would like to your attention to read those warning and the User Manual before using the product. These Warning provides important safety information and should be observed at all times.

1. Please take the devices lightly, do not subject the product to impact or shock. Otherwise, this may cause the accuracy drift
2. Do not immerse the product in water.
3. Please pay attention to the terminal block connection instruction, the wrong mode of operation or opposite installation will destroy the circuit of the devices.
4. Do not touch the exposed electronic circuitry of the device under any circumstances. Keep the circuit is close during installation. As there is the danger of electric shock.
5. Please keep the devices away from children touch to avoid the danger or the accident.
6. Do not keep the product under the hot and moisture environment. Keep the product away from the heat source or near water.
7. Please ensure the screws are fixed on the wall tightly. Do not let the screws approach or close to the surface of PCB board during installation. It has the risk of circuit damage or irreparable damage to devices.

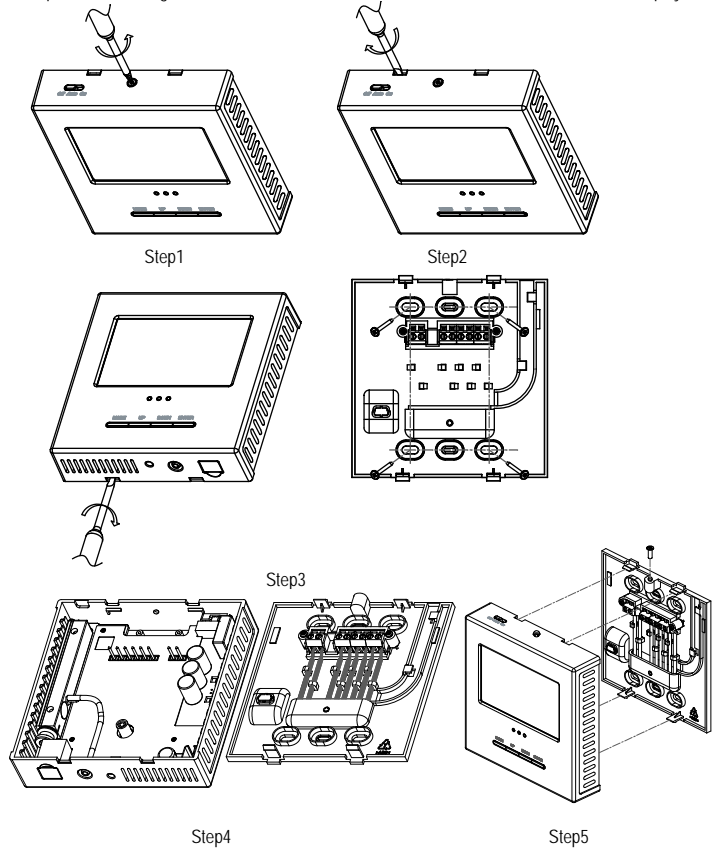
Caring for product

To make sure you receive the maximum benefit from using this product, please observe the follow guideline.

1. Cleaning—disconnect the power before clean. Use a damp cloth; do not use the liquid cleaning agent, such as benzene, thinner or aerosols.
2. Repair—Do not attempt to repair the product or modify the circuitry by yourself. Please contact with our local dealer time or a qualified repairman if the product needs servicing.
3. Calibration— Please observe the calibration operation to make sure the accuracy for the devices when it's necessary.
4. Air diffusion—The ventilation slots on the housing are designed for CO2 diffusion, so these ventilation slots should not be blocked.

Installation Step

- Step 1: Release the screw from the device, take the front cover off.
- Step 2: Release the four screws from the back cover, Take the CO2 board from the back cover.
- Step 3: Using the screw to fix the back cover to the current outlet, let the wires come out of the hole.
- Step 4: Re-assembling the CO2 board by screw to the back cover.
- Step 5: After finishing the terminal block wire connection. Press the front cover to the LCD display.



RJ45 Interface & Wiring Connection

Caution: The RJ45 socket is only for factory calibration use, not for LAN, it was covered by plastic cover, the incorrect RJ 45 connection will have the risk of circuit damage or irreparable damage to devices.

COMMON (LVO-/LCO-/RS232 DGND), Typical Wiring Diagrams

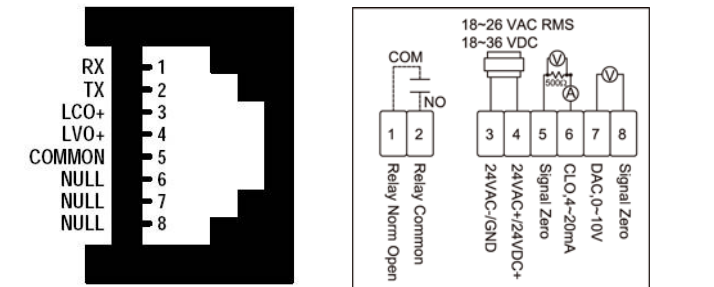


Fig1: RJ45 Interface (Side view)

Customized Settings

When the power has been connected, The CO2 monitor will begin to work. In order to meet your personal requirement, it is advisable to set up the customizing parameter. Warm Up: It lasts approximately 1min before WARM UP disappears; all MODE functions will not response during warm up.

Mute Mode:

1. Press the MODE, the speaker icon flashes simultaneously.
2. Press ENTER, use up/down to select the on/off.
3. Press ENTER again to save the setting.

Setting the ALARM 1 level:

1. Press MODE, until the ALARM 1 icon flashes.
2. Press ENTER. Using the Up/Down to set the parameter. The default alarm 1 is 800 ppm (HVAC), 1000ppm (GreenHouse).
3. Press ENTER again to save the data.

Setting the ALARM 2 level:

1. Press MODE, until the ALARM 2 icon flashes.
2. Press ENTER. Using the Up/Down to set the parameter. The default alarm 2 is 1200ppm (HVAC), 600ppm (GreenHouse).
3. Press ENTER again to save the data.

Note: The factory setting with alarm 1 buzzer off; user can set the alarm on/off according to alarm function instruction.

Setting the Calibration mode:

1. Press the MODE. Until the CALI icon flashes.
2. Press the ENTER, CALI show on the display.
3. Adjust the display to the required CO2 value (user can pump the CO2 gas or use outside natural gas while calibrating) by up/down button.
4. Press the MODE more than 10 sec, CALI flashes. Calibration will be done automatically after about 3 minutes and LCD will display "Pass" or "Fail". If it shows "Fail", please try again.

Setting the AltiMode:

1. Press MODE, until the ALTI icon flashes.
2. Press ENTER, ALTI show on the display meter.
3. Adjust altitude by up/down button to the actual location level.
4. Press ENTER again to save the data.

Using Blank Mode:

1. Press MODE, until the Blank icon flashes.
2. Press ENTER, Blank show on the display of blank mode.
3. Adjust blank mode by up/down button. There are 3 kinds of mode to change: all show, CO2 show, none show.
4. Choose one of these three modes and press ENTER again to save the blank status.

Using the RcFS Mode:

1. Press MODE, until the RcFS flashes simultaneously.
2. Press ENTER, Using the Up/Down to select the No/Yes
3. After the selecting, Press the ENTER to save the changes.

Remark: If the user setting the data or calibrate the sensor wrongly. You can use the RcFS (Recover the factory Setting) to come back the factory setting data.

Advanced Mode

Press the Enter and Up together for about 10 seconds to enter Adv Mode, there will be "lock" and "mode" on the LCD. Remind these setting will change the features of LED /Relay and Analogue output.

Using Lock Icon:

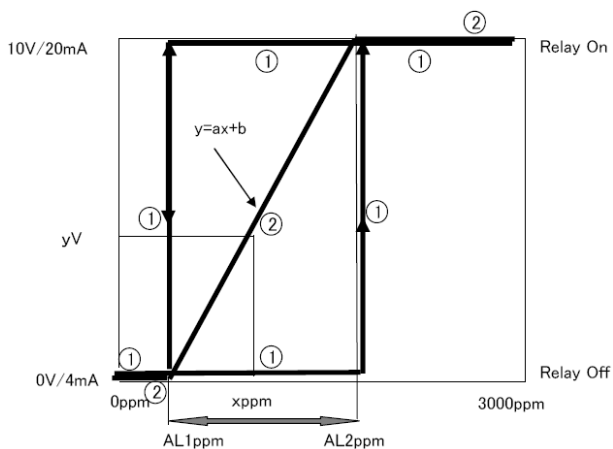
1. Press the Enter and Up together for about 10 seconds to enter Adv Mode, there will be "Lock" on the LCD. Press Up or Down, the LCD will show "on" or "off".
2. If select "off" and press the Enter button, these 4 keys are enable.
3. If select "on" and press the Enter button, these 4 keys are disable (will not response to the user's action).

HVAC / Green House (GH) Mode:

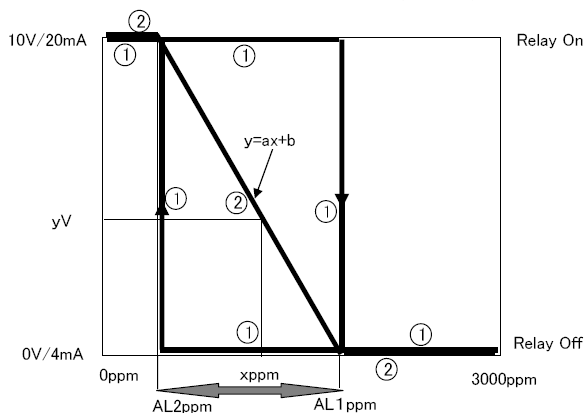
1. Press the Enter and Up together for about 10 seconds to enter Adv Mode, Press Up or Down until appear the "mode", then press the Enter button, the LCD will show "HVAC" or "GH".
2. If select "HVAC" and press the Enter button, AL1 will always be less than AL2.
3. If select "GH" and press the Enter button, AL2 will always be less than AL1.

The CO2 concentration and voltage diagram: (The line ① represents CO2 concentration, the line ② represents voltage/ current)

1. When select "HVAC", AL1 < AL2 (HVAC), if CO2 concentration is rising, the voltage/current will increase;



2. When select "GH", AL1 > AL2 (GH), if CO2 concentration is rising, the voltage/current will decrease.



Remark:
Under Green House Mode, the AL1 must >AL2.
For example: AL1= 900ppm, AL1= 800ppm now, user decrease AL1= 700ppm, AL2 will become 700-Step, (AL2= 600ppm, if step=100ppm; AL1= 680ppm, if step= 20ppm).

Specification

Method -Dual Beam NDIR (Non-Dispersive-Infrared)

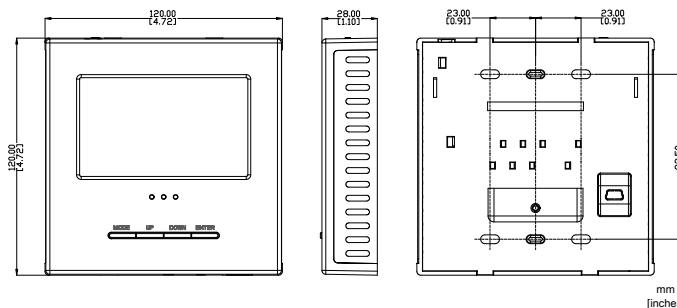
Sample Method -Diffusion or flow through (50 ~200 ml/min)

CO2 Specifications:

Measurement Range	0-3,000 ppm display
Display Resolution	1ppm at 0-1,000ppm; 10ppm at 1,001-3,000ppm
Accuracy	±75ppm or ±5% of reading, whichever is greater
Repeatability	±20 ppm @400ppm
Temperature Dependence	Typ. ±0.2% of reading per °C or ±2 ppm per °C, whichever is greater, referenced to 25°C
Pressure Dependence	0.13% of reading per mm Hg
Response Time	About 2min for 90% of step change

Warm-Up Time	About 60 seconds at 22°C
Sound Alarm	About 65db@10cm
Zone LED Display	Green:<800ppm Yellow:800-1200ppm Red: >=1200ppm (HVAC mode) Green:>1000ppm Yellow:600-1000ppm Red: <=600ppm (GreenHouse mode)
Power Supply	18-26VAC RMS 50/60Hz or 18-36VDC (Double insulated, Full-wave rectifier, no polarity input)
Linear Voltage Output	0-10VDC (100 Ohms output impedance)
Linear Current Output	4-20mA (Max Load is 500 Ohm) (Max Load is 400 Ohm while power supply < 20 VDC)
Relay Output	30VDC or 250VAC, max 2A., SPST. Normally Open
Operating Temperature	0°C -50°C (32°F-122°F)
Operating Humidity Range	0 - 95% RH non-condensing
Storage Temperature	-20°C to +60°C (-4°F to 140°F)
Temperature specification:	
Temperature Range	Display 0°C to 50°C
Display Resolution	0.1°C
Display Options	°C
Accuracy Relay (no action and be under the alarm level)	±1°C when the fan blows to the device directly, the accuracy of temperature is +/- 1.5 °C
Accuracy Relay (action and exceeds the alarm level)	±2.5°C when the fan blows to the device directly, the accuracy of temperature is +/- 1.5 °C
Response Time	20-30 minutes (case must equalize with environment)
RH Specification:	
Measurement Range	20%-90% RH
Display Resolution	1%RH
Accuracy	±5%RH@23°C
Response Time	About 5 min for 63% of step change
Operating Conditions:	
Operating Temperature	0°C to 50°C
Humidity Range	0 - 95% RH non-condensing

Dimension



Calibration

Notice: Before calibrating, you need standard gas or semi-standard gas; there are 3 methods to get standard gas.

Method A: use CO2 in office/building

- Use two Meters (One is the device for calibration. The other one is a calibrated (new) one.
- Use ambient room gas for calibration in office, waiting at least 10min, until the CO2 reading doesn't change
- (Notice: user must not breathe toward the CO2 monitor, CO2 from the user will affect the reading of CO2 monitor)
- Use the reading of the new device as the standard
- Calibrate the device by the Cali Mode instruction.

Method B: use CO2 outsidess

- Use ambient room gas for calibration outsidess, waiting at least 10min, until the CO2 reading doesn't change
- (Notice: user must not breathe toward the CO2 monitor; CO2 from the user will affect the reading of ZGw19)
- Use 380-420ppm as the standard reading.
- Calibrate the device by the Cali Mode instruction.

Method C: use standard CO2 in the bottle

- Pump the standard CO2 gas (0-1000ppm, flux = 0.1-0.2 liter/min) into the CO2 monitor from the Gas Entry Hole waiting about 2-3min.
- Calibrate the device by the Cali Mode instruction.

Fault Codes & Troubleshooting Guide

This section includes a list of Frequently Asked Questions for problems you may encounter with the ZGw19 CO2 Monitor.

No	LCD Fault Icon	Description of the fault	Suggested Actions
1	Er3	The ambient temperature has exceeded the temperature range 0°C to 50°C (32°F to 122°F)	This error will disappear when the temperature returns to the range between 0°C and 50°C (32°F to 122°F)
2	Er4	some wrong measurement or the sensor has exceeded its expected life	Please unplug the AC adapter and reconnect it. If the "Er4" always appears, please contact with the local dealer.
3	Er5 Er6	EEPROM System Problem	Please unplug the AC adapter and reconnect it. If the "Er5, Er6" always appear, please contact with the local dealer.
4	Er7	Internal Data Transmission Error	Please unplug the AC adapter and reconnected it.

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