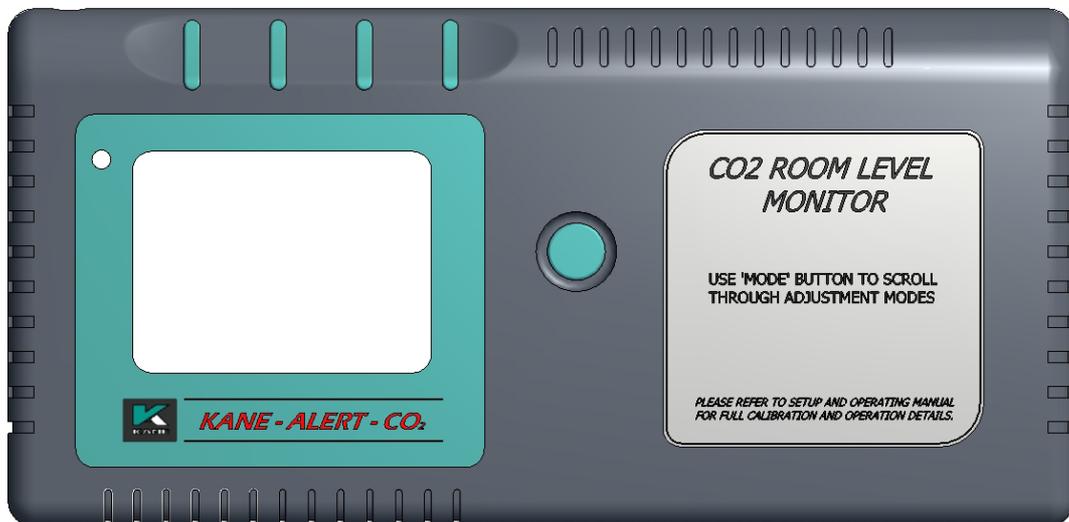


# KANE-ALERT-CO<sub>2</sub> Monitor with Temperature

## Operating Instructions



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This is a portable, handheld carbon dioxide (CO<sub>2</sub>) monitor using NDIR technology to provide long term stability. It also measures ambient temperature.

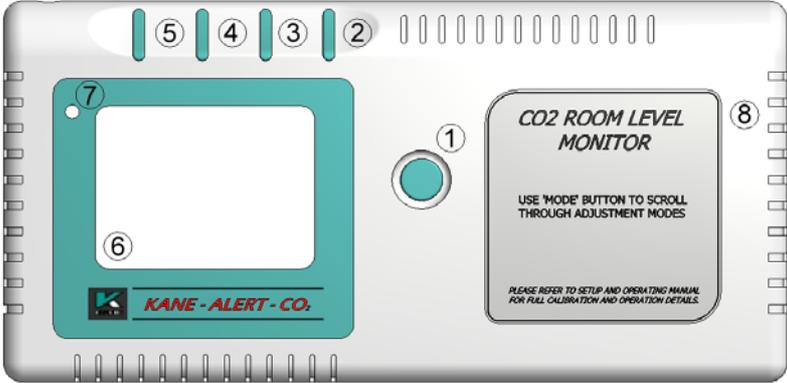
**The monitor also has the following features:**

- ☑ **Data logger** stores 48 sets of CO<sub>2</sub> and temperature readings in the last 24 hours - one log every 30 minutes.
- ☑ **Max/Min mode** records the maximum and minimum concentrations of CO<sub>2</sub> since the monitor was switched on.
- ☑ **Alarm mode** sounds at 1000 PPM (the ASHRAE limit) and can be turned off.
- ☑ **RCFS Mode** recovers original factory settings after the monitor is recalibrated.



- |                 |                     |
|-----------------|---------------------|
| 1. Power Button | 8. Function Label   |
| 2. Enter Button | 9. Gas Entry Hole   |
| 3. Down Button  | 10. Power Inlet     |
| 4. Up Button    | 11. RJ45 Socket     |
| 5. Mode Button  | 12. Housing Stand   |
| 6. LCD Display  | 13. Battery Cover   |
| 7. LED Light    | 14. AA Batteries *4 |

(Display Features and Modes)



## MODE FUNCTIONS

The monitor has several Modes which can be adjusted. In sequence these modes are Alti Mode, Alarm Mode, Outside Mode, Cali Mode, Datalogger Mode, MaxMin Mode and rcFS Mode.

<b>ALTI</b>	Compensates for changes in atmospheric pressure due to altitude or weather conditions.	
<b>ALARM</b>	Alarms when CO <sub>2</sub> concentration exceeds 1000 ppm. Alarm sounder can be switched on or off.	
<b>OUTSIDE</b>	Modifies the outside CO <sub>2</sub> concentration. The factory nominal setting is 400 ppm.	
<b>CALI</b>	Allows trained service personnel to recalibrate the sensor. Take care using this function as errors can be created.	
<b>DATALOGGER</b>	Shows CO <sub>2</sub> and temperature records over the last 24 hours. Reading No. 1 is the most recent. Reading No. 48 is the oldest.	
<b>MaxMin</b>	Shows Max and Min CO <sub>2</sub> readings since last being switched on. These readings are cleared every time the device is switched off.	
<b>rcFS</b>	Recovers the factory setting.	

## OPERATION INSTRUCTIONS

- **Power On**

Press Power button (1) to turn on the monitor after placing 4 AA batteries into the battery compartment (take care to observe correct polarity) or AC adapter plug into the DC socket. CO<sub>2</sub> readings will show after 15 seconds of warm up.

- **WarmUp**

This lasts approximately 1 min before WARMUP disappears; none of the functions will respond during warm up.

- **Normal Operation**

After warm up, the monitor stabilizes and displays CO<sub>2</sub> readings on its Upper Display which remain visible at all times.

- **Temp and Ventilation Rates (Lower Display)**

Use the Up/Down button to scroll through Temperature and Ventilation Modes.

When pressing the Up button, the lower display goes through the following sequence:

Temp °C-> Temp°F-> Vent Rates lps-> Vent Rate cfm/p

\*Note: lps refers to Litres Per Second Per Person;  
cfm/p refers to Cubic Feet Per Minute Per Person

This function assumes that each person exhales 300 cc of CO<sub>2</sub> every minute and calculates the rate of ventilation of external air required to achieve equilibrium at the measured CO<sub>2</sub> level.

## ▪ **Adjusting Modes**

### **1. ALTI Mode – Setting the altitude at which you are using the monitor**

- 1.1. Press Mode until ALTI flashes
- 1.2. Press Mode to alter between m (meters) and ft (feet)
- 1.3. Press Up/Down to adjust the altitude (Step=100m/500ft)
- 1.4 Press Enter to save the setting or leave the ALTI Mode, return to UserMode.

### **2. ALARM Mode – Switching On or Off the Audible Alarm**

- 2.1. Press Mode until ALARM flashes
- 2.2. Press Enter until ALARM “speaker icon” flashes  
Press Up/Down to turn the ALARM On or Off
- 2.3. Press Enter to save the setting and return to UserMode.

### **3. OUTSIDE Mode – Setting the outside level of CO<sub>2</sub> if known**

#### **\*\*Note: Ventilation Rate**

Ventilation rate represents how much air is introduced into the indoor space from the outside. Low levels indicate low ventilation rates and potentially poor air quality. High levels indicate excessive ventilation and potential excessive energy usage. **To obtain an accurate measurement, readings should be taken 2~3 hours after occupancy has stabilized in a space or at a peak in daily CO<sub>2</sub> concentrations.**

In indoor air quality control, CO<sub>2</sub> value is an indicator of ventilation rate. **400ppm (Parts Per Million) is the default CO<sub>2</sub> concentration outside** (according to ASHRAE: American Society of Heating, Refrigeration and Air-conditioning Engineers).

- 3.1. Press Mode until OUTSIDE flashes
- 3.2. Press Enter until OUTSIDE, CO<sub>2</sub> and PPM flash  
Press Up/Down to adjust the reading
- 3.3. Press Enter to save the setting and return to UserMode  
After modification, the VENT Rate will change.

#### **4. CALI Mode – Recalibrating the CO<sub>2</sub> sensor**

4.1. The monitor is pre-calibrated in the factory and should only be recalibrated with a certified test gas in a controlled test chamber. This mode should only be accessed by trained service personnel.

#### **5. DATA LOGGER Mode – Viewing data recorded over the previous 24 hours**

The monitor's internal Datalogger records CO<sub>2</sub> and temperature readings every 30 minutes over the past 24 hours.

- 5.1. Press Mode until DATALOGGER flashes
- 5.2. Press Enter until CO<sub>2</sub> and Temperature are displayed  
Press Up/Down to PAGE UP/DOWN readings
- 5.3. Press Enter to return to UserMode

#### **6. MaxMin Mode – Viewing Maximum and Minimum values**

The monitor's MaxMin Mode displays the maximum and minimum CO<sub>2</sub> readings since the monitor was last switched on.

- 6.1. Press Mode until MAX MIN flashes
- 6.2. Press Enter to alternate between MAX and MIN CO<sub>2</sub> readings
- 6.3. To clear the memory, press UP or DOWN until "CLR" flashes.  
Press Enter to CLEAR the MAX and MIN record
- 6.4. Press Mode or Enter to return to UserMode

#### **7. rcFSMode**

If the CO<sub>2</sub> sensor is incorrectly re-calibrated, the monitor's factory setting can be recovered.

- 7.1. Press Mode until rcFS flashes on the lower display
- 7.2. Press Enter until "no" shows on the upper display
- 7.3. Press Up/Down to change to "yes"  
Press Enter, Factory Setting will reload
- 7.4. Press Mode to return to UserMode

## SPECIFICATIONS

### Display – LCD

Independent CO<sub>2</sub> and Temperature readings

Calculates and Displays Ventilation Rates

### Sample Method – Diffusion

#### ▪ CO<sub>2</sub> Specification

Measurement Range	0-3,000 ppm display
Display Resolution	1ppm from 0~1,000ppm; 5ppm, from 1,000~2,000ppm; 10ppm from 2,000~3,000ppm over 3000 ppm display shows "Hi"
Accuracy	±50 ppm, or ±5% of reading
Repeatability	±20 ppm
Temperature Dependence	±0.1% 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 (Corrected via user input for altitude)
Response Time	<2 min for 63% of step change
Warm-Up Time	<60 seconds at 22°C
Calibration Interval	12 months.

- **Temperature Specification**

Temperature Range	0 to 50°C / 32°F to 122°F
Display Resolution	0.1°C / 0.1°F
Display Options	°C / °F, or off. Set with Up/Down button
Accuracy	±1°C / ±2°F
Response Time	20-30 minutes (case must equilibrate with environment)
Calibration Interval	12 months

- **Power Supply**

Battery type: Alkaline, 4 x AA cells give approx. 80 hours operation.  
External: 6 VDC from external AC/DC adapter supplied as standard.

Note: charger is designed for indoor use only.

**Power Requirement**

160 mA Peak, 15 mA average from 6V

- **General Operating Conditions**

**Operating Temperature:** 0-50° C / 32-122° F  
0-95% RH Non-condensing

**Storage Temperature:** -20 to 60° C / -4 to 140° F

- **LCD ERROR MESSAGES**

The monitor has 3 visual diagnostic messages as follows:



The monitor is measuring temperature outside its measurement range.



These are displayed when it is necessary to reset the monitor. To reset, switch off the monitor, remove its batteries and wait for a minimum of one minute, reinsert batteries and switch on. If either error message remains please contact our Service Department for further assistance.



- **Warranty:** 12 months parts and labour.

# ELECTROMAGNETIC COMPATIBILITY

European Council Directive 89/336/EEC requires electronic equipment not to generate electromagnetic disturbances exceeding defined levels and have adequate immunity levels for normal operation. Specific standards applicable to this analyser are stated below.

As there are electrical products in use pre-dating this Directive, they may emit excess electromagnetic radiation levels and, occasionally, it may be appropriate to check the analyser before use by:

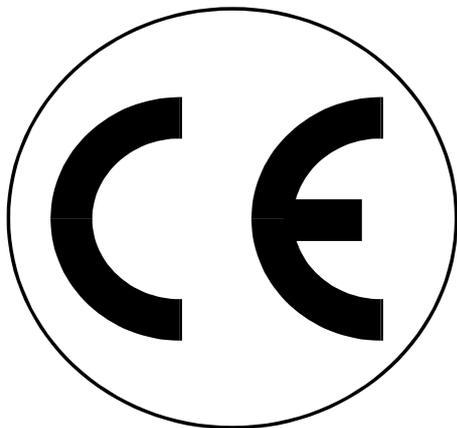
Use the normal start up sequence in the location where the analyser will be used.

Switch on all localized electrical equipment capable of causing interference.

Check all readings are as expected. A level of disturbance is acceptable.

If not acceptable, adjust the analyser's position to minimize interference or switch off, if possible, the offending equipment during your test.

At the time of writing this manual (Nov 2007) Kane International Ltd are not aware of any field based situation where such interference has occurred and this advice is only given to satisfy the requirements of the Directive.



This product has been tested for compliance with the following generic standards:

EN 61000-6-3  
EN 61000-6-1

and is certified to be compliant

Specification EC/EMC/KI/ALERT-CO2 details the specific test configuration, performance and conditions of use.

## **Please Note:**

Batteries used in this instrument should be disposed of in accordance with current legislation and local guidelines.

At the end of the product's life it should be re-cycled in accordance with current legislation and local guidelines.

## **ANNUAL RECALIBRATION AND SERVICE**

There are no user serviceable components in this product.

Although sensor life is typically more than five years the analyser should be re-calibrated and serviced annually to correct for any long-term sensor or electronics drift or accidental damage.

Local regulations may require more frequent re-calibration.

## **APPENDIX**

Recommended **Carbon Dioxide** Levels:

British Standards BS6896, BS6230 and BS5990 confirm CO<sub>2</sub> concentration should not exceed 2800ppm where people are working.

HSE Regulation EH40 sets the maximum occupational exposure limit at 5000ppm.

BSRIA recommend a maximum of 800ppm over an eight hour time weighted average.

ASHRAE (62/99) recommends a maximum level of 1000ppm.

Data on ambient CO<sub>2</sub>:

NOAA observatory  
(US. National Oceanic and Atmospheric Administration)

<http://www.cmdl.noaa.gov/ccgg/insitu.html>

<http://www.cmdl.noaa.gov/ccgg/iadv/>

Thank you for buying this  
instrument.

Before use,  
please register on our website

**[www.kane.co.uk](http://www.kane.co.uk)**

to start its 1 year warranty.