

CLR-C1-CO Battery Powered Carbon Monoxide Alarm Detector



Carbon Monoxide Alarm

Instructions

Read carefully and retain for as long as the product is being used. It contains vital information on the operation and installation of your Alarm. This booklet should be regarded as part of the product. If you are just installing the Alarm, this booklet must be given to the householder. This booklet is to be given to any subsequent user.

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1. Read This First

- Congratulations on becoming the owner of an Clare Controls Carbon Monoxide Alarm. This will help protect you and your household from the dangerous effects of Carbon Monoxide- the silent killer.
- Remove the battery pulltab to engage the batteries. The Carbon Monoxide Alarm (CO Alarm) is powered up by carefully rotating it onto the mounting plate which activates the on/off switch. The red, amber & green lights will immediately flash in sequence to show they are working. (For the Display models, the LCD screen will display all icons). Then wait 15 seconds after connecting the power before button testing.
- Install a CO Alarm in every room that contains a fuel burning appliance, particularly high occupancy areas e.g. bedrooms, kitchens etc.
- In rooms with a fuel burning appliance, install (preferably) on the ceiling, (1ft (300mm) from walls) and between 5ft to 10ft horizontally from appliance. In rooms remote from the appliance install at 'head height', where the Alarm indicators can be seen.
- Test the Alarm weekly by pressing the test/hush button, the Alarm will sound (at a diminished sound output level initially and then quickly reach maximum sound output level).
- Replace Alarm after approx. 10 years operation (see 'Replace by' date on side wall label).
- Do not fit Alarm until all construction is completed to avoid contamination.
- Individuals with health issues may consider warning devices which provide audible and visual signals for carbon monoxide concentrations under 30ppm.

2. Carbon Monoxide – The Silent Killer

2.1 What is Carbon Monoxide?

Many people are killed each year, and many more suffer ill health from Carbon Monoxide (CO) poisoning. CO is an invisible, odorless, tasteless and extremely toxic gas. It is produced by appliances and vehicles burning fuels, such as coal, oil, natural gas, propane, kerosene, paraffin, wood, gasoline, diesel, charcoal etc. CO is absorbed by red blood cells in the lungs in preference to oxygen - this results in rapid damage to the heart and brain from oxygen starvation.

High levels of CO in a house can be caused by:

- Incorrectly or poorly installed fuel-burning appliances.
- Blocked or cracked chimneys/flues.
- Blocked vents or draught-proofing which makes areas with fuel burning appliances or fireplaces airtight.
- Engines of cars, lawnmowers etc. that are left running in confined spaces.
- Portable kerosene or propane heaters in poorly ventilated rooms.

2.2 What happens when your CO Alarm detects Carbon Monoxide?

When the Alarm detects potentially dangerous levels of CO, it flashes the red alarm LED immediately and then sounds a loud alarm if the CO persists. Table B below shows how the CO Alarm reacts to different levels of CO gas and exposure time. At higher levels of CO the alarm sounds sooner. The rate of flashing of the red LED indicates the level of CO. If your CO Alarm sounds follow the instructions on page.

NEVER IGNORE THE ALARM !

2.3 Symptoms of Carbon Monoxide Poisoning

Table A

Concentration of CO in Air ▲ ppm	Inhalation Time (approx.) and Symptoms Developed
35	The maximum allowable concentration for continuous exposure in any 8 hour period according to OSHA *.
150	Slight headache after 1.5 hours.
200	Slight headache, fatigue, dizziness, nausea after 2-3 hours.
400	Frontal headaches within 1-2 hours, life threatening after 3 hours, also maximum parts per million in flue gas (on free air basis) according to US Environmental Protection Agency.
800	Dizziness, nausea and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2-3 hours.
1,600	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3,200	Headache, dizziness and nausea within 5-10 minutes. Death within 25-30 minutes.
6,400	Headache, dizziness and nausea within 1-2 minutes. Death within 10-15 minutes.
12,800	Death within 1-3 minutes.

The following symptoms may be related to CARBON MONOXIDE POISONING and should be discussed with ALL members of the household:

Mild exposure: Headaches, running nose, sore eyes, often described as “flu-like” symptoms;

Medium exposure: Dizziness, drowsiness, vomiting;

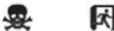
Extreme Exposure: Unconsciousness, brain damage, death.

Many cases of reported CARBON MONOXIDE POISONING indicate that while victims are aware they are not well, they become so disoriented they are unable to save themselves by either exiting the building or calling for assistance.

ppm = parts per million *OSHA Occupational Safety & Health Association



Table B: CO Alarm Response

	Red Light	Display Icon (before horn sounds)	Display Icon (after horn sounds)	Horn / Sounder
CO Gas Level				
Approx. 30 ppm	Off*	Blank	Blank	Off
Approx. 70 ppm	1 flash every 3 secs	 070 PPM	 070 PPM	on within 60-240 mins (typ 90 mins)
Approx. 150 ppm	1 flash every 2 secs	 150 PPM	 150 PPM	on within 10-50 mins (typ 30 mins)
Approx. 400 ppm	1 flash every 1 secs	 400 PPM	 400 PPM	on within 4-15 mins (typ 9 mins)
Approx. 750 ppm	1 flash every 1 secs	 750 PPM	 750 PPM	on within 3 mins (typ 2 mins)

* Unless it has alarmed previously (see CO Alarm Memory below) ppm values shown in table are for example purposes only

Alarm Indicators

CO Present: Red LED flash only

CO Alarm: Red LED flash + sounder

Faults: Yellow LED flash + beeps

CO present (before Alarm sounds): When the Alarm detects CO the red LED flashes in accordance with Table B. This helps locate CO leaks as the unit gives an immediate indication.

(Without this feature the CO would need to be present for typically 90 minutes for an alarm sound to be given). Note the red LED flashes may be triggered by CO produced by gas appliances, from car engines or from nearby barbecues. This is usually not a concern, unless the red LED flashes persist until the alarm sounds and the CO source is unknown.

The display models will display CO concentrations greater than 30ppm in accordance with Table B.

NOTE: The CO Alarm may sound if cigarette smoke is blown into it, or aerosols are released nearby.

CO ALARM MEMORY

The CO Alarm memory is an important feature of the CO Alarm where, even if the house is unoccupied during an alarm condition, it warns the homeowner that the unit has previously detected CO gas and been in alarm. The memory feature has two operation modes:

- memory indication for 24 hour period after alarm.
- memory recall on demand

24 hour memory indicators: After alarm, the RED LED will flash at different rates every 50 seconds depending on the level of CO detected - see Table C.

Memory recall on demand: To review the memory status after initial 24 hours, press and hold the test button, the red LED will flash in accordance to Table C. Display models will show the peak level of CO measured.

Table C: CO Alarm Memory Indicators

CO Gas Level	Red Light Response	
	24 Hours	On Demand (Button Press)
approx. 70 ppm	1 flashes every 50 sec	1 flashes
approx. 150 ppm	2 flashes every 50 sec	2 flashes
approx. 400 ppm	4 flashes every 50 sec	4 flashes
approx. 750 ppm	4 flashes every 50 sec	4 flashes

Reset Memory: Hold down the test button until the red LED stops and the green LED starts flashing. Cover the Alarm with a cloth to muffle the sounder during this time. Please note that the memory will also be reset when the unit is switched off.

3. Where to Place CO Alarms

NATIONAL FIRE PROTECTION ASSOCIATION REQUIRED PROTECTION

For your information the National Fire Protection Association's Standard 720 advises as follows:

Carbon Monoxide Alarms shall be installed as follows:

- (1) Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedroom.
- (2) On every occupiable level of a dwelling unit, including basements but excluding attics and crawl spaces.
- (3) Other locations where required by applicable laws, codes or standards.

The equipment should be installed using wiring methods in accordance with the National Fire Protection Association's Standard 72, 720. (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269)

IMPORTANT!

Specific requirements for Carbon Monoxide Alarm installation vary from state to state and from region to region. Check with your local Fire Department for current requirements in your area.

3.1 Ideally a Carbon Monoxide Alarm should be installed in:

- Every room containing a fuel burning appliance, and
- Remote rooms where occupants spend a considerable amount of time
- Every bedroom.

However if the number of Carbon Monoxide Alarms to be fitted is limited, the following points should be considered when deciding where best to fit the Alarm(s)

- If there is an appliance in a room where people sleep, place a CO Alarm in this room
- Locate a CO Alarm in a room containing a flueless or open-flued appliance
- Locate an Alarm in a room where the occupant(s) spend most of their time (e.g. family room)
- In a studio apartment, the CO Alarm should be placed as far away from the cooking appliance as possible, but near to where the person sleeps
- If the appliance is in a room not normally used, such as a furnace room, the CO Alarm should be placed immediately outside the room so that the alarm will be heard more easily.

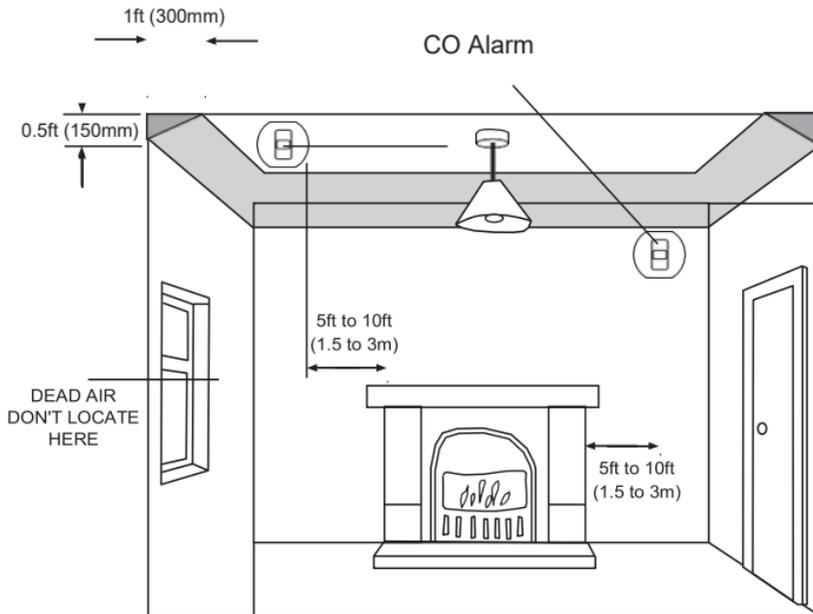


Figure 1
Location in room with a fuel burning appliance

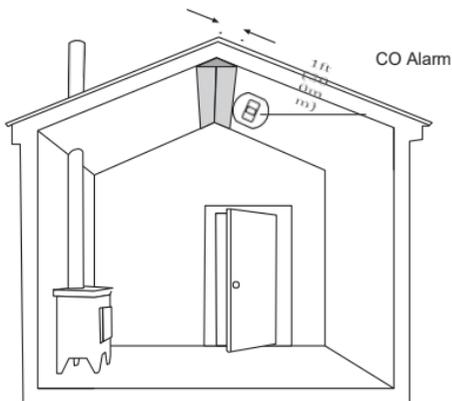


Figure 2
Location in rooms with sloped ceilings, the CO Alarm should be located at the high side of the room

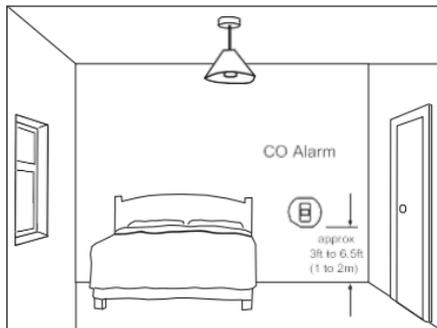


Figure 3
Location in bedrooms & other rooms remote from the appliance (i.e. at breathing level)

3.2 Unsuitable Locations

Do not place the CO Alarm in any of the following areas.

- (1) In the immediate vicinity of a cooking appliance (keep it at least 3ft (1 meter) horizontally from it).
- (2) Outside the building.
- (3) In an enclosed space (e.g. in or below a cupboard).
- (4) In a damp or humid area.
- (5) Directly above a sink, stovetop or oven.
- (6) Next to a door, window, air vent or anywhere that it could be affected by draughts.
- (7) Next to a ceiling or exhaust fan or air conditioning vents.
- (8) Over heat sources such as radiators or heating vents.
- (9) Where it would be obstructed, e.g. by curtains or furniture.
- (10) In an area where the temperature could drop below 40°F (4.4°C) or rise above 100°F (37.8°C).
- (11) Where dirt or dust could block the sensor.
- (12) Where it could be easily knocked or damaged, or where it could be accidentally turned off or removed.
- (13) In a bathroom or other areas where the CO Alarm may be exposed to water splashes, dripping or condensation
- (14) Near paint, thinners, solvent fumes or air fresheners.

3.31 If locating the CO Alarm in a room with a fuel burning appliance (see figure 1)

- If it is mounted on a wall, it should be located at a height greater than the height of any door or window but still be at least 0.5ft (150mm) from the ceiling.
- If it is mounted on the ceiling it should be at least 1ft (300mm) from any wall or light fixture.
- The CO Alarm should be a horizontal distance of between 5ft to 10ft (1.5m and 3m) from the potential CO source.
- If there is a partition in the room, the CO Alarm should be located on the same side of the partition as the potential source of carbon monoxide.
- In rooms with sloped ceilings and fuel burning appliances, the CO Alarm should be located at the high side of the room (see fig 2).

3.32 If locating the CO Alarm in a bedroom or in rooms remote from a fuel burning appliance (see figure 3)

- Mount the CO Alarm relatively close to the breathing zone of the occupants.

Whatever position is chosen make sure it is possible to view the three LED indicators, when in the vicinity of the Alarm.

WARNING: A CO Alarm should not be used as a substitute for proper installation, use and maintenance of fuel-burning appliances, including appropriate ventilation and exhaust systems.

WARNING: Your CO Alarm is intended for use in ordinary indoor locations of family units. It is not designed to measure compliance with OSHA commercial or industrial standards.

4. Installation

Warning: The Installation of this apparatus should not be used as a substitute for proper installation, use and maintenance of fuel burning appliances including appropriate ventilation and exhaust systems.

4.1 Installation Procedure

1. Select a location complying with the advice in Section 3.
2. Remove the mounting plate from the packaging/ Alarm.
3. Place the mounting plate on the ceiling/wall exactly where you want to mount the Alarm. With a pencil, mark the location of the two screw holes.
4. Taking care to avoid any electrical wiring in the ceiling, drill holes using a 13/64" (5.0mm) drill bit through the center of the marked locations. Push the plastic screw anchors provided into the drilled holes. Screw the mounting plate to the ceiling/wall.
5. Alternatively, if desired, the CO Alarm will also free stand on a flat surface with the mounting plate attached.



Figure 4

6. If using the RF feature, ensure the RF module is fitted correctly into the base of the Alarm. For further advice on the RF installation, see the corresponding booklet for the RF Module.

7. Carefully align the Alarm with the base, gently press home & twist on – see Figure 4. (This connects the batteries). The red, amber & green LEDs will immediately flash in sequence to show the Alarm is powered correctly. In addition, the icons on the LCD display on the Display models will also become visible.

8. Press the Test button (after 15 seconds) to ensure that the Alarm is functioning correctly (see Figure 5).

9. Install all the other Alarms similarly.

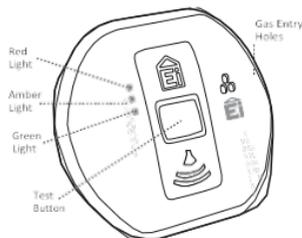


Figure 5

4.2 How to Tamperproof the Alarm

The Alarm can be made resistant to unauthorized removal. Break off the small pillar on the base as shown in Figure 6a. To remove the Alarm once installed, it is now necessary to use a small screwdriver, to release the catch (push catch towards the ceiling) and then twist off the Alarm (see Figure 6b).

If necessary it is possible to further secure or tamperproof the Alarm by using a No.2 or No.4 3/32" to 7/64" (2 to 3mm) diameter - not supplied self-tapping screw 1/4" to 5/16" (6 to 8mm) long to firmly lock the Alarm and its mounting plate together (see Figure 7).

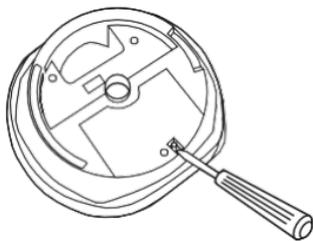


Figure 6a



Figure 6b



Figure 7

5. Testing / Monitoring & Maintenance

Testing

Frequent testing of the system is a requirement to ensure its continued and safe operation. To test the Alarm press the hold the test button.

The Green LED will flash and the horn will ramp up to full sound to indicate the Alarm is operating correctly.

Guidelines and best practices for testing are as follows

1. Immediately after the system is installed or upgraded
2. Once weekly thereafter
3. After prolonged absence from the dwelling (e.g. after extended vacation)
4. After any significant home repairs or remodeling work.

Silencing (Hush)

When the Alarm sounds, after sensing CO, pressing the test/hush button will immediately silence the Alarm (the red light will continue to flash). If CO is still present the red LED and sounder will activate again after about 4 minutes. The Alarm can only be silenced once during a CO incident. At levels > 250ppm CO the Alarm cannot be silenced.

Monitoring

The CO Alarm will self-check (monitor) itself and give a status update every 50 seconds if there are any problems.

The status of the Alarm can also be checked on demand by using the test button. The table below shows the status response to both the self-check and on demand testing.

If the Alarms are indicating a fault, pressing the test button will silence the beeps for a 24 hour period. This is for your convenience and can only be done once.

Monitoring Summary						
Status Result	Red LED (Alarm)	Amber LED (Fault)	Green LED (Power)	Sounder	LCD Display	Action
Standby	No visual or audible indication if unit is OK					
Unit OK (Button Test)	Off	Off	On	Ramps up to full sound		
Low Battery	Off	1 Flash	Off	1 BEEP		Replace batteries
Sensor Fault	Off	2 Flashes	Off	2 Beeps	REPLACE UNIT	Replace Unit
End of Life (EOL)	Off	3 Flashes	Off	3 Beeps	REPLACE UNIT	Replace Unit

Maintenance

Clean the outside housing by occasionally wiping with a clean damp cloth. Do not use any cleaning agents, bleaches, detergents or polishes, including those in aerosol cans. Avoid spraying air fresheners, hair spray, paint or other aerosols near the CO Alarm. Do not place air fresheners near the unit.

Use the narrow nozzle of a vacuum cleaner to remove fluff and other contamination from the cover slots and gas entry holes.

Caution: Do not paint the CO Alarm.

Remove the CO Alarm when decorating. Do not allow water or dust to contaminate the Alarm.

Warning: Do not open or tamper with the CO Alarm. There are no user serviceable parts inside and this can damage the Alarm.

Battery Replacement

If the alarm indicates a yellow flash with a single beep or the low battery icon is displayed on display alarms remove the Alarm from the mounting plate, remove the battery cover (see figure 8) and replace the batteries. Use only Duracell Alkaline MN2400BK AAA size batteries (from a local retailer). Insert the new batteries with the orientation shown on the base. Replace the battery cover and carefully line up the Alarm on the base, gently press home & twist on. This connects the batteries. The red, amber & green lights will immediately flash in sequence to show the batteries are connected properly. In addition, the icons on the LCD display on the Display models will also light up. After 15 seconds press the Test button to ensure that the Alarm works.

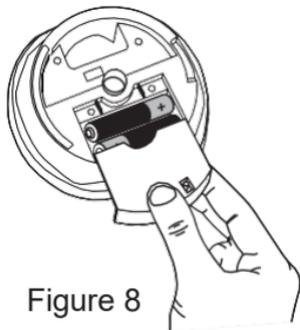


Figure 8

If the alarm still indicates a yellow flash with a single beep or the low battery icon is displayed on display alarms the batteries may be depleted. Replace with fresh batteries. **If the red, amber & green lights do not flash in sequence and there is no display on the LCD display units the batteries may be installed incorrectly (reverse polarity). Remove the Alarm from the mounting bracket, remove the battery cover and check if the batteries are installed correctly. If the batteries were connected incorrectly and after correcting the polarity of the batteries, for the first hour the Alarm may indicate CO is present by a flashing red LED for non-display Alarms; for display models the Alarm may indicate CO level readings and/or random icons. Please note that during this period the Alarm will still activate as required during an actual CO event.**

Warning! - Constant exposures to high or low temperatures or high humidity may reduce battery life. Use only batteries specified in marking. Use of a different battery may have a detrimental effect on alarm operation. For environmentally sound disposal, remove the Alarm from its mounting plate models, open the battery door and remove the batteries) and dispose in accordance with best practice and guidance on WEEE disposal and recycling.

Functional Gas Test

The Carbon Monoxide Alarm checks for CO gas every 4 seconds and when exposed to the CO gas, the red light will flash (as per Table B) to confirm that it is detecting the CO gas. Solo C6 brand canned CO testing agent may be used to verify the

Alarm's ability to sense CO. To gas test the Alarm, for 3 seconds spray the canned CO within 1/4" of the gas entry holes (see Figure 9). Within seconds, the red light will begin to flash (as per Table B) to confirm that the Alarm has detected the CO.

To enter the accelerated functional gas test mode, press the Test button momentarily (approx. 1 second) while the Alarm is indicating CO presence. The Alarm will sound 2 x 4 temporal tone patterns to indicate an Alarm condition.

To return the unit to standby, simply leave the Alarm in clean air for a few minutes until the red light is no longer flashing.



Figure 9

6. What to do when the alarm sounds

Warning! Actuation of your CO Alarm indicates the presence of carbon monoxide (CO) which can KILL YOU. If an alarm signal sounds:

- 1) Operate reset/ Silence button (only operational at concentrations <250ppm)
- 2) Call your local Fire Department or 911
- 3) Immediately move to fresh air – outdoors or by an open door/ window. Do a head count to ensure that all persons are accounted for. DO NOT re-enter the premises until the first responders have arrived, the premises have been aired out and your Alarm returns to its normal condition.

4) After following steps 1-3, if your Alarm reactivates within a 24 hour period, repeat steps 1-3 and call a qualified appliance technician to investigate for sources of CO from fuel burning equipment and appliances, and inspect for proper operation of this equipment. If problems are identified during this inspection have the equipment serviced immediately. Note any combustion equipment not inspected by the technician and consult the manufactures' instructions, or contact the manufacturers directly, for more information about CO safety and this equipment. Make sure that motor vehicles are not, and have not been, operating in an attached garage or adjacent to the residence.

Note: When ventilation is provided by leaving the window and doors open, the CO build up may have dissipated by the time help arrives and the Alarm may have stopped sounding. Although your problem may appear temporarily solved it is crucial that the source of the CO is determined and appropriate repairs made.

7. How to Protect your Family

Follow these guidelines to reduce the risk of Carbon Monoxide poisoning.

(1) Know and look out for warning signs that Carbon Monoxide may be present.

These include:

- The CO Alarm warning of abnormal levels.
- Staining, soot marks or discoloration on or around appliances.
- A pilot light frequently going out.
- A strange smell when an appliance is operating.
- A gas flame which is yellow or orange, instead of the normal blue.
- Family members (including pets) exhibiting the "flu-like" symptoms of CO

poisoning as described above. If any of these signs are present get the appliance serviced before further use. If feeling ill, get immediate medical help.

(2) Choose all appliances and vehicles which burn fossil fuels such as coal, oil, natural gas, propane, kerosene, wood, gasoline, diesel, charcoal etc. with care and have them professionally installed and regularly maintained.

(3) These appliances must “breathe in” air to burn the fuel properly. Know where the air comes from and ensure vents remain unobstructed (particularly after any construction or remodeling work).

(4) The appliances must also “breathe out” waste gases (including the CO) – usually through a flue or chimney. Ensure chimneys and flues are not blocked or leaking, and get them checked every year. Check for excessive rust or cracks on appliances and pipe work.

(5) Never leave your car, motor bike or lawnmower engine running in the garage with the garage door closed. Never leave the door from the house to the garage open if the car is running.

(6) Never adjust your own gas pilot lights.

(7) Never use a gas stove, cooktop or a barbecue grill for home heating.

(8) Children should be warned of the dangers of CO poisoning and instructed never to touch, or interfere with CO Alarms. Do not allow small children to press the test/hush button as they could be subjected to excessive noise when the Alarm sounds.

(9) Leaving windows or doors slightly open (even a few inches) will significantly reduce the risk of high levels of CO occurring. The high levels of draught-proofing in modern houses reduces ventilation and can allow dangerous gases to build up.

(10) Install CO Alarms in all the areas recommended in this booklet.

(11) Recognize that CO poisoning may be the cause when family members suffer from “flu-like” symptoms when at home but feel better when they are away for extended periods.

8. Technical Specification

Power: Two Alkaline AAA type batteries (replaceable)

CO Sensitivity: Meets UL2034

Electromagnetic Compatibility: Complies with UL2034 / FCC Part 15

Test/Hush Button: Checks electronics, sounder, sensor and batteries

Operating Temperature: 40°F (4.4°C) to 100°F (37.8°C)

Humidity Range: 15% to 95% R.H. (non-condensing)

Audible Alarm: 85dB(A) at 10ft (3m) minimum

LCD Display: Displays CO level above 30ppm (in steps of 5ppm)

RF Functionality: RF Module required (see Model Chart on page 2)

CO Alarm Memory: Indicates if unit was previously in alarm

Dimensions: 4.7" x 4.1" x 1.6" (120mm x 105mm x 40mm)

Weight (grams): 6.53 ounces (185g)

9. Getting the CO Alarm Serviced

If your CO Alarm fails to work after you have carefully read all the instructions, verified that the unit has been installed correctly, and ensured that it has good batteries connected, return it for repair or replacement. This should be where it was purchased.

Some states or jurisdictions do not allow the limitation or exclusion of incidental or consequential damages, or limitations on how long an implied warranty last so the above limitation may not apply to you.

Do not interfere with the Alarm or attempt to tamper with it. This will invalidate the guarantee, but more importantly may expose the user to shock or fire hazards. This guarantee is in addition to your statutory rights as a consumer.

11. Limitations of CO Alarms

(1) The CO Alarm will not work without good batteries or if the batteries are placed in reverse polarity. If the batteries have been drained the Alarm will not give protection. Button test the Alarm weekly and on return from vacations or other long absences.

(2) Carbon Monoxide must enter the unit for it to be detected. There may be Carbon Monoxide in other areas of the house (e.g. downstairs, in a closed room etc) but not in the vicinity of the CO Alarm. Doors, air drafts and obstructions can prevent CO from reaching the Alarm. For these reasons we recommend CO Alarms are installed both near and in bedrooms, particularly if bedroom doors are closed at night. Additionally install in rooms where members of the household spend much of their time, and in rooms with potential sources of CO gas.

(3) The CO Alarm may not be heard. The sound output is loud but it may not be heard behind a closed door or if it is too far away. The Alarm may not wake up somebody who is impaired by alcohol or medications. The alarm sound may be masked by other sounds such as T.V., stereo, traffic noise etc. Installing CO Alarms on either side of closed doors will improve their chance of being heard. This CO Alarm is not designed for people with impaired hearing.

(4) CO Alarms don't last indefinitely. CO Alarms are sophisticated electronic devices with many parts. Although CO Alarms and their component parts have undergone stringent testing, and are designed to be very reliable, it is possible that parts can fail. Therefore, you should test your CO Alarms weekly. CO Alarms must be replaced after 10 years of operation.

(5) CO Alarms are not a substitute for life insurance. House-holders are responsible for their own insurance. CO Alarms warn of increasing CO levels, but we do not guarantee that this will protect everyone from CO poisoning.

(6) CO Alarms are not suitable as early warning Smoke Alarms. Some fires produce Carbon Monoxide, but the response characteristics of these CO Alarms are such that they would not give sufficient warning of fire. Smoke Alarms must be fitted to give early warning of fire.

(7) CO Alarms do not detect the presence of natural gas (methane), propane, butane or other combustible gases. Install combustible Gas Alarms to detect such gases. **Note:** Carbon Monoxide Alarms, with electrochemical sensors have a cross sensitivity to hydrogen. This means that they can alarm due to sensing hydrogen produced by batteries which are incorrectly charged, such as on boats or with battery back-up systems such as those used with alternative energy systems. The unit will alarm with 500 ppm H₂ after between 10 and 40 minutes exposure.

This CO Alarm is intended for residential use. It is not intended for the use in

industrial applications where Occupational Safety and Health Administration (OSHA) requirements for carbon monoxide detectors must be met.

This carbon monoxide alarming device is designed to detect carbon monoxide gas from ANY source of combustion. It is NOT designed to detect smoke, fire, or any other gases.

WARNING: THIS CO ALARM IS DESIGNED TO PROTECT INDIVIDUALS FROM THE ACUTE EFFECTS OF CARBON MONOXIDE EXPOSURE. IT WILL NOT FULLY SAFEGUARD INDIVIDUALS WITH SPECIFIC MEDICAL CONDITIONS. IF IN DOUBT CONSULT A MEDICAL PRACTITIONER.

12. Troubleshooting

ALARM DOES NOT WORK WITH THE TEST BUTTON:

- (1) Wait 15 seconds after connecting the power before button testing.
- (2) Hold button down firmly for at least 5 seconds.
- (3) Check the Alarm is secured correctly on the mounting plate.
- (4) Check if batteries are inserted in the correct polarity.
- (5) Replace batteries.

ALARM SOUNDS FOR NO APPARENT REASON:

Follow the detailed instructions in Section 6 Entitled “What to do when the alarm sounds” (page 21).

If there are still problems:

- (1) Ensure there are no fuel burning appliances in the vicinity which could be leaking CO gas (e.g. even from next door).
- (2) Ensure there are no fumes in the area (e.g. paint, thinners, hair spray, chemical

cleaners aerosol sprays, damp proofing done with and aqueous emulsion such as Amino functional siloxane and Alkylalkoxysilane.

(3) Ensure there is no outdoor source of CO in the vicinity (e.g. a car with engine running, heavy traffic, heavy air pollution, barbecue fumes etc).

(4) Ensure there is no source of hydrogen such as batteries being charged (e.g. on boats or in Uninterruptable Power Supplies (UPS)).

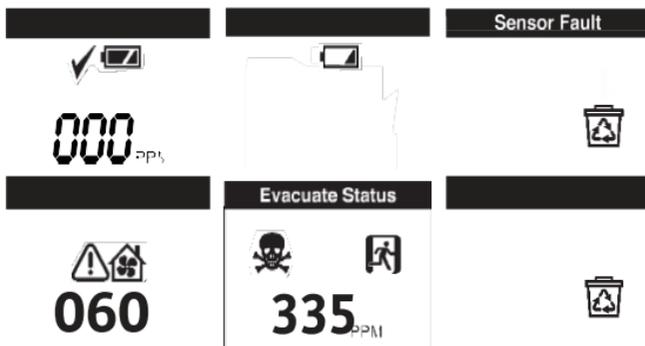
(5) Ensure there is not excessive smoke or fumes from devices such as Egyptian shisha, or hookah pipes, especially those that use coal or charcoal to heat the tobacco.

(6) If the Alarm is installed with an RF Module, ensure that there are no problems with the other RF interconnected devices.

(7) Press the test/hush button to silence the alarm.

If the unit continues to sound it is possibly defective and should be replaced (see section 9 “Getting the CO Alarm Serviced”).

13. Display & Indicator Summary



**CLR-C1-CO
Indicator Summary**

Normal Operation	Red LED	Amber LED	Green LED	Sounder
Power Up	1 flash	1 flash	1 flash	Off
Standby	Off	Off	Off	Off
Button Test (Weekly)	Off	Off	Flashing (every sec)	Temporal full sound
Unit Sensing CO gas itself	Flashing (as per table B)	Off	Off	Temporal full sound
SensingCOthroughRFinterconnect	Off	Off	Off	Temporal full sound
Fault Mode				
Low Battery Condition	Off	1 flash (every 50 secs)	Off	1 beep with flash
Sensor Fault Condition	Off	2 flashes (every 50 secs)	Off	2 beeps with flash
End of Life Condition	Off	3 flashes (every 50 secs)	Off	3 beeps with flash

Service Diagnostics

Diagnostics Modes	Action	Red LED	Yellow LED	Sounder	Action
Fault Checks					
Low battery	Press & hold button	Off	1 flash	1 beep with flash	Replace Batteries
Faulty Sensor	Press & hold button	Off	2 flashes	2 beeps with flashes	Replace Alarm
End of Life (EOL)	Press & hold button	Off	3 flashes	3 beeps with flashes	Replace Alarm
Alarm Memory	Action	Red LED	Green LED	Sounder	LCD Display
24 hours after event		Flashes as per Table C	Off	Off	Off
Long term memory	Press & hold button	Flashes as per Table C	Off	Temporal full sound	CO ppm
Memory Erase	Keep button pressed after long term test	Flashes as per Table C	Wait for Green light then release button	Temporal full sound	CO ppm

FCC / IC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Per FCC 15.19 (a) (3) and (a) (4), This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

Per FCC 15.21, The user manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this

device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris celles pouvant causer un mauvais fonctionnement de l'appareil.

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 20 cm is maintained from the general population.

FCC: 2ABBZ-RF-UTCO-433

IC: 11817A-RFUTCO433

This Class B digital apparatus complies with Canadian ICES-3B.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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Conforms to UL Std.2034
Certified to CSA Std. 6.19-01

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