

## A. INTRODUCING the American Sensors Carbon Monoxide Alarm

**▲** This symbol alerts you to important operating instructions or to potentially hazardous situations. Please read these items carefully.

**IMPORTANT:** Please read this entire owner's manual and follow all directions as written.

### ▲ WARNING:

**Never ignore your carbon monoxide alarm if it activates. See sections D & F for more information.**

## INTRODUCTION

This Carbon Monoxide Alarm is an effective product for detecting any build-up of carbon monoxide in your home.

Your new Alarm:

- Monitors for carbon monoxide continuously
- Is easy to install
- Sounds a loud alarm (85 dB) when it detects a hazardous build-up of carbon monoxide
- Performs a continuous self diagnostic check of the electronics
- The CO900 & CO920 models feature a back up power source in case of a mainline power failure
- Has a Test/Reset button so that you can test or reset the alarm at any time
- Is listed by Underwriters Laboratories Inc. to UL2034 - effective October 1, 1998
- Has a five-year limited warranty (Note: does not include back-up battery)

### ▲ WARNING:

Carbon monoxide alarm is designed to detect carbon monoxide gas from ANY source of combustion. It is NOT designed to detect smoke, fire or any other gas.

If you have any questions regarding your unit, please call our Healthy Home Hotline at 1-800-387-4219.

## B. Where should you install the Alarm?

The human body is most vulnerable to the effects of carbon monoxide during sleeping hours. Since carbon monoxide moves freely in the air, the suggested location is in or as near as possible to sleeping areas of the home. For maximum protection, a carbon monoxide alarm should be located outside primary sleeping areas or on each level of your home.



The illustration above highlights suggested CO alarm locations in the home.

The electronic sensor detects carbon monoxide, measures the concentration and sounds a loud alarm before a potentially harmful level is reached.

### Caution:

This alarm will only indicate the presence of carbon monoxide at the sensor. Carbon monoxide may be present in other areas.

Some locations may interfere with the proper operation of the alarm and may cause false alarms or trouble signals.

### Do not place the Alarm in the following areas:

- Where the temperature may drop below 40°F (4.4°C) or exceed 100°F (37.8°C).
- Near paint thinner fumes or household cleaning products. Ensure proper ventilation when using these types of chemicals.
- Within 6 feet (1.8 m) of any cooking or open flame appliances such as furnaces, stoves and fireplaces.
- In exhaust streams from gas engines, vents, flues or chimneys.
- Do not place in close proximity to an automobile exhaust pipe; this will damage the alarm.

### ▲ WARNING:

Do not use this unit in an outlet that is controlled by a wall switch. To work properly, the unit must not be blocked by furniture or draperies.

## C. How should you install the plug-in models?

Your American Sensors Carbon Monoxide Alarm is easy to install to protect you and your family in your home, cottage, cabin and office.

Simply plug the Carbon Monoxide Alarm into a standard 120 Volt AC wall outlet in your home.

If you have a double outlet, plug the unit into the bottom outlet so that the top outlet is available for other use.



To provide maximum protection, please allow 48 hours for your unit to initialize after installation. The unit will, however, immediately warn you of dangerous carbon monoxide levels if they are present in your home.

## FOR PLUG-IN MODELS CO900 AND CO920:

Connect the back-up battery to terminals, as per section I, before plugging in the alarm. These models are equipped with a back-up battery for security in the case of a temporary power failure and will provide at least eight hours of back-up protection when used with the recommended battery.

## D. What do the LED lights mean?

### Power – Green

This lights up green when the unit has power. It is normal for this light to be on while the unit is plugged in. If this light is off, the unit is not operating properly.

### Alarm – Red

This flashes Red when the full alarm sounds. It is normal for this light to turn on when you press the Test/Reset button. The alarm signal consists of 4 rapid beeps repeating every 5 seconds, with the Red LED light flashing every time the alarm horn beeps.

**Trouble Alarm:** If the unit detects a fault within its circuitry, it will indicate a malfunction with a single loud beep and flashing red light once every minute. The green LED will be off.

### Low Back up Power – Yellow

CO900 & CO920 Models only:

Your Carbon Monoxide Alarm has a low level back-up battery warning. When the battery power is low, the yellow LED will flash every 5 seconds and the alarm will beep once every minute. During a mainline power failure or when unplugged to test the back-up power source (as per Section H) the indicator will light up and flash yellow, accompanied by a short beeping sound if the battery is low. This means the battery needs immediate replacing. It is normal for this light to turn on once or twice immediately after you plug in the alarm or after a power failure.

## E. What does the Digital LED Display Mean?

### FOR MODELS CO910 & CO920 ONLY:

These models feature a Digital LED Display (Light Emitting Diode) that will show the level of carbon monoxide present when the unit senses concentrations of 46 parts per million (ppm) or greater. See section L for more information on the dangers of carbon monoxide.

For any concentration below 45 PPM the display will show one dash “—”

### Reading the Digital LED Display

CO Concentration (ppm)	Display Accuracy
46–120 PPM	± 25%
121–180 PPM	± 50%
181 PPM and up	+ 150% - 50%
Malfunction	Display shows blank

### Caution:

Your unit is constantly monitoring the air and will go into full alarm if ongoing, hazardous levels of CO are detected. Follow the instructions in section F if the full alarm sounds.

## ▲ F. What should you do if the ALARM sounds?

If potentially harmful levels of carbon monoxide are detected, your unit will go into a continuous full alarm. The alarm signal consists of 4 rapid beeps repeating every 5 seconds, with the red LED light flashing every time the alarm horn beeps.

### ▲ WARNING

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

1. Operate reset/silence button;
2. Call your emergency services (fire department or 911);
3. Immediately move to fresh air—outdoors or by an open door/window. Do a head count to check that all persons are accounted for. Do not reenter the premises nor move away from the open door/window until the emergency services responders have arrived, the premises have been aired out, and your alarm remains in 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 manufacturer's instructions, or contact the manufacturer 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.

### What to do after resetting the unit following an alarm?

A full continuous alarm within six minutes after reset confirms ongoing presence of harmful levels of carbon monoxide. If this occurs follow instructions 1-3 above.

### What to do after a carbon monoxide problem has been corrected?

After a carbon monoxide problem has been corrected reset your alarm by pushing the Test/Reset button as per the instructions on Section G.

### ▲ WARNING:

This device will only alarm if carbon monoxide is detected. If not responded to, the presence of carbon monoxide can be fatal. For list of sources of carbon monoxide, see Section M.

### Typical conditions which can result in CO false alarms:

- 1) Excessive spillage or reverse venting of fuel burning appliances caused by outdoor ambient conditions, such as:
  - a) Wind direction and/or velocity, including high gusts of wind.
  - b) Heavy air in the vent pipes (cold/humid air with extended periods between cycles).
  - c) Negative pressure differential resulting from the use of exhaust fans.
  - d) Simultaneous operation of several fuel burning appliances competing for limited internal air.
  - e) Vent pipe connections vibrating loose from clothes dryers, furnaces, or water heaters.
- 2) Obstructions in or of unconventional vent pipe designs which can amplify the above situations.
- 3) Extended operation of unvented fuel burning devices (range, oven, fireplace, etc.).
- 4) Temperature inversions which can trap exhaust gasses near the ground.
- 5) Car idling in an open or closed attached garage, or near a home.

## G. How can you test your back-up battery?

The CO900 & CO920 alarms are equipped with a 9 volt back-up battery to supply power to your alarm in the event of a power failure. A fully charged battery will power your alarm for at least 8 hours and still be able to provide an alarm signal for 12 hours. The battery should be tested at least once a month.

### How to test the back-up power source

1. Unplug the unit from the outlet.
2. Wait for 3 minutes to see if the unit produces a low battery signal (Yellow LED flashes every 5 seconds, unit beeps and red LED flashes once per minute).
3. If yellow LED flashes, the battery is low and should be replaced immediately (see section I) or your unit will not detect carbon monoxide during a power failure.
4. Re-install the unit according to section C.

**Important:** The yellow low back-up indicator will warn of a low back-up battery only when there is a power failure or the unit is unplugged.

### Battery Installation Flag

When protruding from the side of the unit it indicates there is no battery in the alarm. Beside this flag on the side of the unit is marked:

IF BATTERY FLAG IS PROTRUDING: **WARNING: BATTERY HAS BEEN REMOVED**

### Caution:

Your unit will not operate during a power failure with the flag protruding. Always ensure the unit contains a fully charged battery that will power the unit as per the tests above.

## H. How can you Test/Reset the Alarm?

A green power light indicates that power is supplied.

The American Sensors Carbon Monoxide Alarm is designed to do a continuous self-diagnostic check of its micro processing circuitry when in use.

To test the Alarm (wait at least ten minutes after installing it), press and release the Test/Reset button. The Alarm will sound for two full cycles of the full alarm pattern (4 beeps–delay, Red LED flashes with every beep).

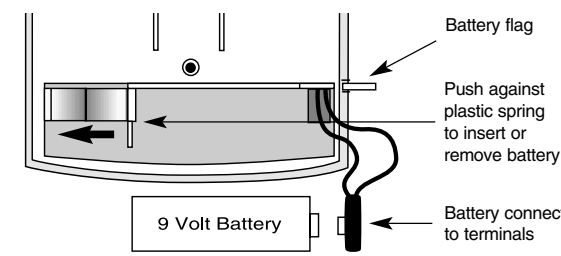
To reset after an alarm, press the Test/Reset button to silence or reset the unit. This will silence the alarm for up to 6 minutes. If the unit re-alarms after reset it confirms the ongoing presence of harmful levels of carbon monoxide.

If you have any questions regarding your unit, please call our Healthy Home Hotline at: **Dicon Global Inc. 1-800-387-4219**

## I. How can you replace your back-up battery?

How to replace the battery

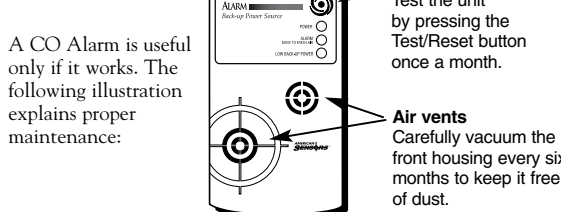
1. Unplug alarm from outlet; battery is at the bottom on back of unit
2. Push battery to left to remove from plastic spring
3. Remove existing 9 volt battery
4. Insert fresh 9 volt battery into terminals. Push battery and wires back into enclosure. Use only recommended battery.
5. Test new battery as per section H.



CO900 & CO920 models recommended battery: Duracell 9V Alkaline MN1604 or MX1604 (Available at most retail outlets) Use of non-recommended batteries can have a detrimental effect on alarm operation

## J. How can you maintain your Alarm?

A CO Alarm is useful only if it works. The following illustration explains proper maintenance:

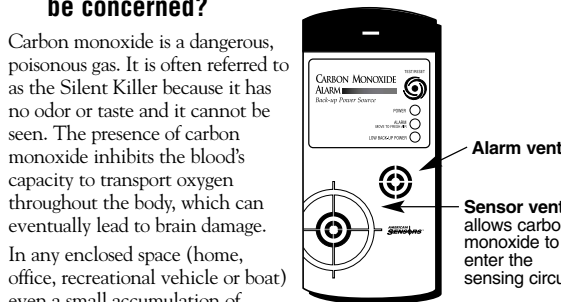


### ▲ WARNING:

Do not paint over this CO alarm.

## K. What is carbon monoxide and why should you be concerned?

Carbon monoxide is a dangerous, poisonous gas. It is often referred to as the Silent Killer because it has no odor or taste and it cannot be seen. The presence of carbon monoxide inhibits the blood's capacity to transport oxygen throughout the body, which can eventually lead to brain damage. In any enclosed space (home, office, recreational vehicle or boat) even a small accumulation of carbon monoxide can be dangerous.



## L. What are the possible symptoms of carbon monoxide poisoning?

Carbon monoxide (CO) is odorless, colorless, tasteless and very toxic. When inhaled, it produces an effect known as chemical asphyxiation. Injury is due to the combining of CO with the available hemoglobin in the blood, which lowers the oxygen-carrying capacity of the blood. In the presence of carbon monoxide, the body is quickly affected by oxygen starvation.

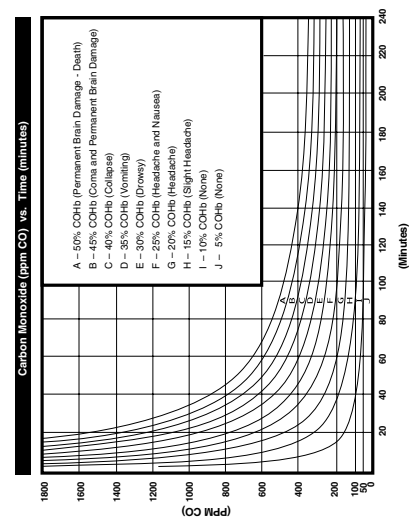
The following symptoms are related to carbon monoxide poisoning and should be discussed with all members of the household so that you know what to look for:

- **Extreme Exposure (A-C):** Unconsciousness, convulsions, cardio-respiratory failure, death
- **Medium Exposure (D-G):** Severe throbbing headache, drowsiness, confusion, vomiting, fast heart rate
- **Mild Exposure (H-J):** Slight headache, nausea, fatigue (often described as “flu-like” symptoms)

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. Young children and household pets may be the first affected. Exposure during sleep is particularly dangerous because the victim usually does not awaken.

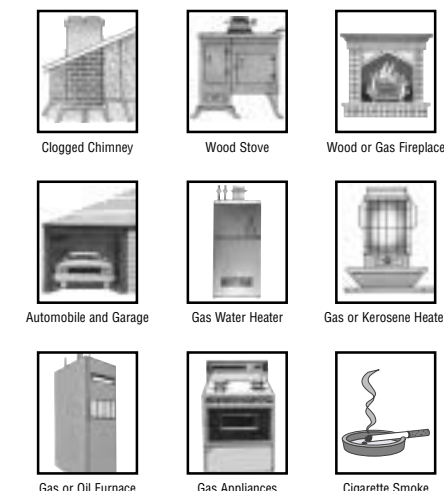
The amount of carbon monoxide in the air is measured as ppm (parts per million). The graph below shows the important relationship between carbon monoxide in the air, exposure time and health effects.

For most people, mild symptoms generally will be felt after several hours of exposure to 100 ppm of carbon monoxide. Higher levels will lead to more severe symptoms or death.



## M. What are the potential sources of carbon monoxide?

Although many products of combustion can cause discomfort and adverse health effects, it is carbon monoxide (CO) that presents the greatest threat to life.



CO is produced by the incomplete combustion of fuels such as natural gas, propane, heating oil, kerosene, coal, charcoal, gasoline or wood. The incomplete combustion of fuel can occur in any device that depends on burning for energy or heat such as furnaces, boilers, room heaters, hot water heaters, stoves or grills and in any gasoline-powered vehicle or engine (e.g., generator set or lawnmower). Tobacco smoke also adds CO to the air you breathe. When properly installed and maintained, your natural gas furnace and hot water heater do not pollute your air space with carbon monoxide. Natural gas is known as a “clean burning” fuel because under correct operating conditions the combustion products are water vapor and carbon dioxide, which are not toxic. (Carbon dioxide [CO<sub>2</sub>] is also present in the air we exhale and is necessary for plant life.) The products of combustion are vented from furnaces and water heaters to the outside by means of a flue duct or chimney.

### Caution:

- Correct operation of fuel-burning equipment requires two key conditions. There must be:
- An adequate supply of air for complete combustion
  - Proper venting of the products of combustion from the furnace through the chimney, vent or duct to the outside

### Typical Carbon Monoxide Problems

1. Equipment problems, due to defects, poor maintenance, damaged or cracked heat exchangers.
2. Collapsed or blocked chimneys or flues, dislodged, disconnected or damaged vents.
3. Downdraft in chimneys or flues; this can also be caused by very long or circuitous flue runs, improper location of flue exhaust or wind conditions.
4. Improper installation or operation of equipment, chimneys or vents.
5. Air tightness of house envelope results in a lack of air for the combustion process.
6. Inadequate exhaust of space heaters or appliances.
7. Exhaust ventilation/fireplace competing for air supply.

## N. Technical Information

Your unit utilizes a proprietary Electronic Sensing Technology that permits the unit to vary the exposure time before the alarm sounds based on carbon monoxide concentrations.

### Exposure Times

The carbon monoxide concentrations and time standards for the alarms are as follows:

### The Full Alarm Activates

- Within 60–240 minutes at exposures of 70 ppm
- Within 10–50 minutes at exposures of 150 ppm
- Within 4–15 minutes at exposures of 400 ppm

Models CO900, CO910 & CO920	
Power Supply	120 VAC, 60 Hz, 7W
Dimensions	16cm x 7.5cm x 4.5cm (6.6" x 3.0" x 1.7")
<b>Normal Operating Conditions:</b>	
Operating Temperature	4.4°C to 37.8°C (40°F to 100°F)
Relative Humidity	30% to 70%
Alarm	85 dB at 10 ft

### ▲ WARNING:

This product is intended for use in ordinary indoor locations of family living units. It is not designed to measure compliance with Occupational Safety and Health Administration (OSHA) commercial and industrial standards. Individuals with medical problems may consider using warning devices which provide audible and visual signals for carbon monoxide concentrations under 30 ppm.

## O. Warranty Information

### 5 Year Limited Warranty

Dicon Global Inc., which manufactures American Sensors Carbon Monoxide Alarms, warrants its product, to the original consumer purchaser, to be free from defects in material and workmanship under normal use and service for a period of five (5) years from date of purchase. Dicon Global Inc. makes no other express warranty for this Carbon Monoxide Alarm. No agent, representative, dealer or employee of the Company has the authority to increase or alter the obligations or limitations of this warranty. The company's obligation of this warranty shall be limited to the repair or replacement of any part of the alarm which is found to be defective in materials or workmanship under normal use of service during the five (5) year period commencing with the date of purchase.

Units in need of repair should be returned to the point of purchase. Or call 416-493-3457, for shipping instructions and a returned goods authorization number, to return to Dicon Global Inc. Returned goods must be shipped prepaid.

The company shall not be obligated to repair or replace units which are found to be in need of repair because of damage, unreasonable use, modifications, or alterations occurring after the date of purchase.

The duration of any implied warranty, including that of merchantability or fitness for any particular purpose, shall be limited to five (5) years on the Alarm commencing with the date of purchase. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company's negligence or fault. Some states/provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary regionally.

### Important:

Not suitable as a smoke alarm or for detecting other gases. This device is not suitable for installation in a hazardous location, as defined in the national electrical code.

## P. Tips for the Homeowner

### Energy Conservation and Indoor Air Quality

Two steps that homeowners take to conserve energy may adversely affect indoor air quality.

Since air leakage can account for as much as 40% of heat loss, houses are being made more air tight. Reduced air leakage will contribute to higher concentrations of air contaminants from indoor sources and can cause draft reversal in the furnace or fireplace chimney when the demand for air by fireplaces, furnaces and exhaust fans exceeds the air supplied by leakage area and supply ducts.

Converting from oil to gas, without taking steps to prevent chimney deterioration, will increase the risk of chimney blockage, draft failure and the associated release of combustion products into the house. Qualified contractors and inspection by the gas company are recommended.

**Dirt and Blockage**  
Never insulate or try to seal up a draft hood, wind cap or exhaust vent on any gas appliance (furnace, hot water heater, range, dryer or space heater). Keep your equipment area clean. Don't store anything that could restrict air circulation close to equipment.

It is absolutely essential to your safety that panels and grills on the furnace are kept in place and that the fan compartment door is closed when the furnace is operating.

If you have a gas water heater, make sure that combustion air openings at the bottom of the tank and the opening below the draft diverter (on top of the tank next to the flue duct) remain unblocked.

If you have a gas dryer, the exhaust duct must be vented to the outside and have a hood at the end. Check that the exhaust system is not blocked by lint or debris and that the flapper in the hood moves freely.

For all fuel-burning equipment, make sure that vent hoods and pipes are not blocked by insulation, leaves or bird nests. Using other equipment that consumes or exhausts household air

If you use exhaust fans, a fireplace or other fuel burning heaters or stoves:

Run exhaust fans for just a minute or two at a time. Prolonged use could remove too much air, and it wastes heat. Do not run power attic vents during the winter or when your furnace is on.

When your fireplace, coal or wood stove is operating, open a window and close off warm air registers in the room or install a fresh air duct directly to the fireplace or stove so that it won't steal air from your furnace.

### Confining or enclosing gas-fired equipment

If you have partitioned off your furnace and water heater, you may need additional ventilation.

### Danger Signs

Stuffy, stale or smelly air, back drafts and soot from a fireplace or furnace chimney usually means your home needs more air for proper combustion and healthy living. For gas-fired equipment, mostly yellow (rather than clear blue) burner flames, a pilot light that keeps going out, or a smell of gas indicate trouble. Turn off the equipment and contact your gas company emergency service.

### Additional Safety Tips

Have your fuel-burning equipment checked periodically for safety and efficiency by a qualified service technician.

If you are adding a wood or coal burning stove to a home, make sure that the stove is properly installed and vented. Check with the Building and Inspections Department of your local municipality or consult a heating contractor before installation. If you have already installed a wood or coal stove without a building permit or inspection, consult your local municipal building authority. Some “do-it-yourselfers” have unknowingly created dangerous conditions. Once you file for a permit, a qualified inspector will check your installation and explain how to rectify any mistakes.

Do not expose yourself to carbon monoxide through carelessness. Never operate a gasoline-powered engine in a confined or enclosed space such as a garage or tool shed. Never use a kerosene stove or charcoal grill in a confined space such as a closed garage or recreational van.

On masonry chimneys inspect the clean-out regularly to ensure that the chimney is free and clear of debris.

Regardless of the fuel your furnace, fireplace or stove uses, your chimney should be inspected from time to time by a competent chimney contractor.

Never try to add a “heat reclaimers” or “automatic flue damper” to your gas furnace or water heater. Gas installation safety codes prohibit use of these devices as an add-on to an existing furnace because of the risks of incorrect installation and mechanical failure.

When using paints, household cleaning supplies or similar materials, be sure that you're using them in a well ventilated area. Following sensible maintenance and safety procedures in the home will give you fuel savings without endangering your health.

## Q. COMMONLY ASKED QUESTIONS

### Q. What does the alarm sound like?

A. The alarm signal consists of 4 constantly repeating rapid beeps every 5 seconds, with the red LED light flashing every time the alarm horn beeps.

### Q. Should I locate the unit in a high or low location?

A. Carbon monoxide is virtually the same weight as air and therefore the alarm protects you in a high or low location.

### Q. Is it normal that the unit is slightly warm?

A. Yes, your alarm may be slightly warm due to a transformer located inside.

### Q. Will this unit detect smoke or fire?

A. No, a carbon monoxide alarm only detects carbon monoxide. Smoke alarms are still necessary.

### Q. How do I test the unit?

A. Push the test/reset button. Do not use car exhaust or intentionally introduce carbon monoxide through other methods. These methods are dangerous to you and the pollutants from car exhaust may damage the unit.

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**AMERICAN SENSORS™**  
**CARBON MONOXIDE ALARM**

