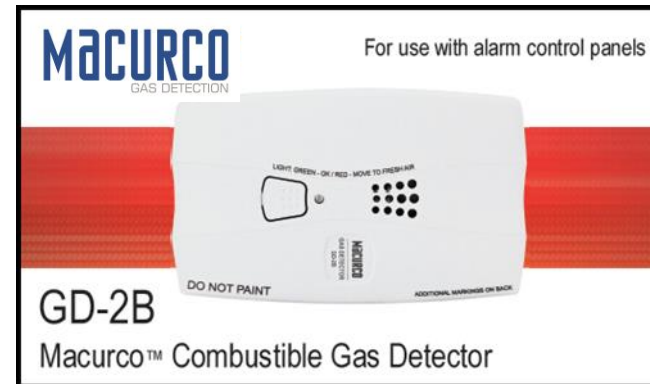


# Macurco Security Series Training

*Gas Detection. It's What We Do.*

# Macurco Security Series Detectors



# CM-E1 Carbon Monoxide Detector



# CM-E1 Carbon Monoxide Detector

- Low voltage (9-32 DC)
- Designed for connection to UL listed fire alarm/burglary control panels
- Intended for non-hazardous locations such as residences, retail stores, office buildings, and institutional buildings
- Not intended for use in parking garages to control exhaust fans or for use in industrial applications such as refineries and chemical plants
- The small, low profile unit is in a white plastic case. It surface mounts to a wall using the supplied rear housing or flush mounts in a 2 x 4 x 1-3/4 inch deep single gang switch or handy electrical box
- Can be Field Tested with Carbon Monoxide Gas
- 900 square feet coverage



# CM-E1 Carbon Monoxide and Hydrocarbon Fuels

- The usual sources of Carbon monoxide are defective heat sources such as furnaces or wood burning stoves and automobiles running in adjoining garages. The CM-E1 can detect CO from these sources, as well as any other sources of CO
- Detector alarms at multiple levels of exposure to carbon monoxide based on time weighted averages of the gas present
- Listed to UL standard 2075 for the Standard For Safety for Gas and Vapor Detector and Sensors
- Tested to UL 2075 using UL 2034 sensitivity limits for carbon monoxide gas

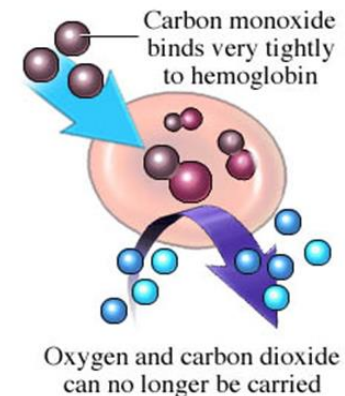
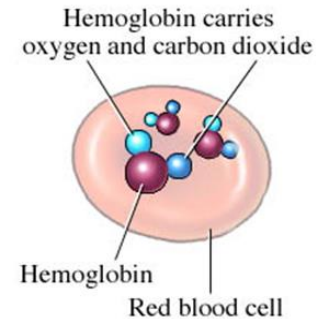


# CM-E1 Carbon Monoxide and Hydrocarbon Fuels

- Mount a CM-E1 in the hallway near each bedroom or office area. In addition, another CM-E1 may be mounted just inside the door from the adjoining garage. Consider placing another detector in a bedroom or office that is adjacent to a furnace room.
- Detector may be installed on either a ceiling or a wall.
  - If installed on a peaked, gabled, or sloped ceiling, it should be located about 3 feet from the highest point
- The unit can be placed vertically or horizontally on a wall, so the information on the front of the CM-E1 can be read in a normal manner (not upside down).
- Do NOT mount the CM-E1 in a corner. Use the same spacing as for smoke detectors - 30 foot (9 meters) centers, 900 sq. feet (83 sq. meters) per detector.

# CM-E1 Carbon Monoxide and Hydrocarbon Fuels

- Carbon monoxide results from the incomplete combustion of hydrocarbon fuels. Carbon monoxide interferes with blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects
- Carbon monoxide is an odorless, colorless and toxic gas
  - It is impossible to see, taste or smell the toxic fumes
  - This gas can kill you before you are aware it is present
- At lower levels of exposure, Carbon Monoxide can cause mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue





# Carbon Monoxide and Hydrocarbon Fuels

CO Level in Air	Health Effects
0 ppm	Fresh Air
100 ppm	Slight headache after 1-2 hours.
200 ppm	Dizziness, headache, nausea after 2-3 hours.
400 ppm	Dizziness, headache, nausea after 1-2 hours / life threatening after 3 hours.
800 ppm	Dizziness, headache, nausea after 45 minutes, unconscious after 1 hour, death within 3 hours.
1,600 ppm	Dizziness, headache, nausea after 20 minutes, death within 2 hours.
3,200 ppm	Dizziness, headache, nausea after 10 minutes, death within 60 minutes.
6,400 ppm	Dizziness, headache, nausea after 1-2 minutes, death within 30 minutes.
12,800 ppm	Instantaneous effects, death within 3 minutes.

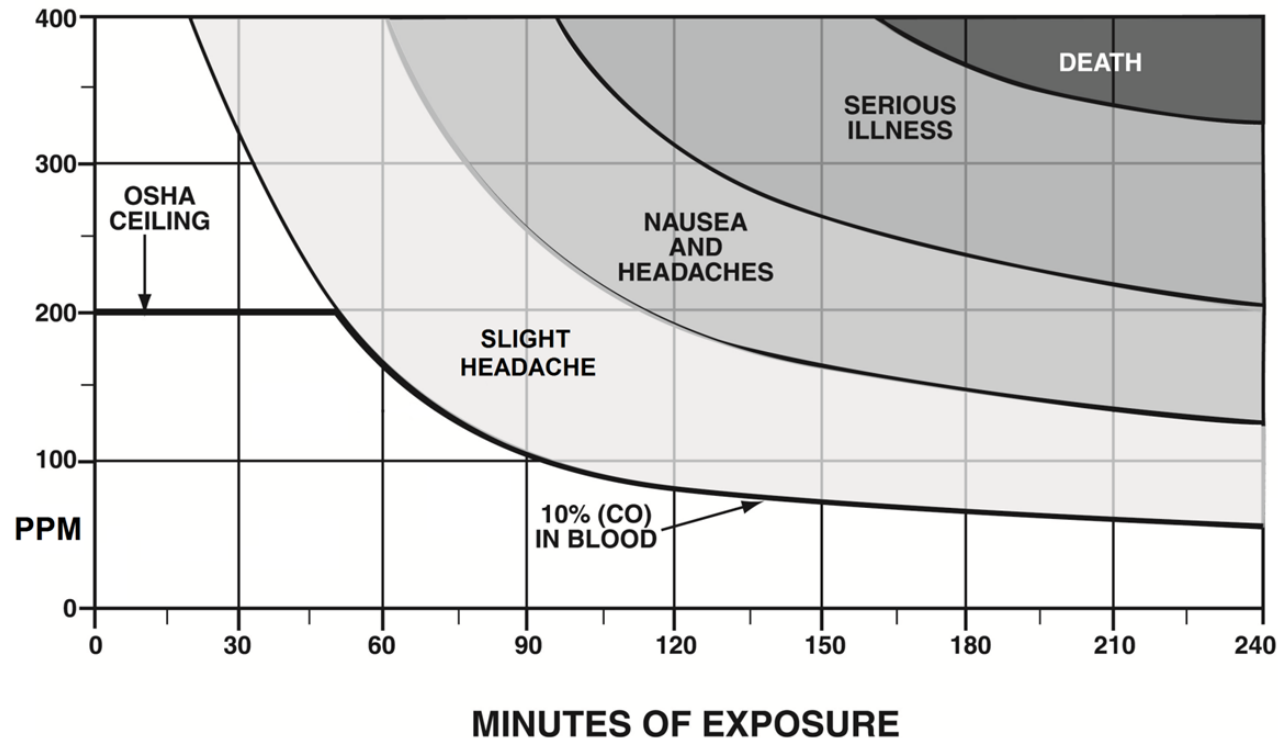


# CM-E1 Carbon Monoxide and Hydrocarbon Fuels

- Continuously monitors the ambient air at the sensor
- If CO levels reach a dangerous level RED light will turn on, alarm relay will switch to actuate the alarm circuits in the control panel, and buzzer on CM-E1 will sound
- The CM-E1 is programmed to alarm if the danger levels of carbon monoxide are exceeded, which are time and concentration-related
- The alarm points are in accordance with the provisions of UL 2034:
  - 70 ppm of CO after 60 to 240 minutes
  - 150 ppm of CO after 10 to 50 minutes
  - 400 ppm of CO after 4 to 15 minutes

# CM-E1 Carbon Monoxide and Hydrocarbon Fuels

## CARBON MONOXIDE DANGER LEVELS



# CM-E1 Carbon Monoxide Detector

- 11L 500 ppm Aerosol Carbon Monoxide Field Test Gas
- Allows installers to do a Functional Test of the CO sensor
- Flow rate of the CME1-FTG is 10 LPM providing enough gas to quick test 20-30 CM-E1 Carbon Monoxide sensors
- Quickly press the TEST/RESET button 5 times within 5 seconds. The buzzer will do a quick double beep and the LED will flash Amber alternating with a pause
- Aim the nozzle of the aerosol can at the buzzer grate area and press for 4 to 5 seconds
- Wait for a few seconds. The LED should blink Green rapidly and the buzzer should double beep every 15 seconds – Pass
- Press the button once to return to normal mode



# GD-2B Combustible Gas Detector



# GD-2B and Heating Gases: Propane and Methane

- Low voltage electronic detector of combustible, heating type gases
- Designed for connection to Fire Alarm/Burglary Control Panels
- Used in ordinary indoor locations of family and living units and office workspaces
- Intended for installation in buildings in non-hazardous locations such as residences, retail stores, office buildings, and institutional buildings
- Small, low profile unit in a white plastic case
- Surface mounts to a wall using the supplied rear housing or flush mounts in a 2 x 4 x 1-3/4 inch deep single gang switch or handy electrical box
- Can be gas tested by directing gas from an unlit butane cigarette lighter into the detector through the vent holes
- 900 square feet coverage



# GD-2B and Heating Gases: Propane and Methane

- Gas boilers, furnaces, water heaters, clothes dryers, fireplaces and stoves are usual sources of gas leaks
- Can detect gas from these sources, as well as any other sources of combustible gas
- Designed to meet UL standard 2075 for the Standard For Safety for Gas and Vapor Detector and Sensors
- Sensitivity based on UL 1484 Standard for Residential Gas Detectors - Alarm set point: 25% LEL
- Test & Reset switch conducts internal tests and actuates alarm relay
- Solid State Electronic sensors: no maintenance or recalibration
- Can be self-restoring or latching
- Optional Buzzer: Produces repeating loud tone bursts during alarm, and chirps if sensor trouble is found

# GD-2B and Heating Gases: Propane and Methane

- A combustible gas detector is usually located in each room (except kitchens or bathrooms) where there are gas appliances or through which gas pipes pass
- If the gas used is natural gas (methane) mount on a wall about one foot down from the ceiling. If the gas used is propane (LP), mount on a wall or column one foot above the floor
- Use the same spacing as for smoke detectors 30-foot centers, 900 square feet per detector
- Do NOT mount a corner. Do NOT mount in kitchens or bathrooms as alcohol's, ammonia, cleaning solvents and aerosol propellants may cause alarms



# GD-2A Combustible Gas Detector



# GD-2A and Heating Gases: Propane and Methane

- Low voltage electronic detector of combustible, heating type gases designed for connection to UL Listed Fire Alarm/Burglary Control Panels
- Product is for use in ordinary indoor locations of family living units and office workspaces
- The GD-2A is intended for installation in buildings in non-hazardous locations such as residences, retail stores, office buildings, and institutional buildings
- Can be gas tested by directing gas from an unlit butane cigarette lighter into the detector near the left hand side through one of the vent holes
- 900 square feet coverage



# GD-2A and Heating Gases: Propane and Methane

- Gas boilers, furnaces, water heaters, clothes dryers, fireplaces and stoves are usual sources of gas leaks
- GD-2A can detect gas from these sources, as well as any other sources of combustible gas
- Listed to UL Standard 2075 for the Standard for Safety for Gas and Vapor Detector and sensors
- Sensitivity tested based on UL 1484 Standard for Residential Gas Detectors
- Alarm set point: 25% LEL
- Can be self-restoring or latching
- The three part plastic case allows the GD-2A to be either surface mounted or installed over a four-inch square or double gang electrical box, providing a near flush mount

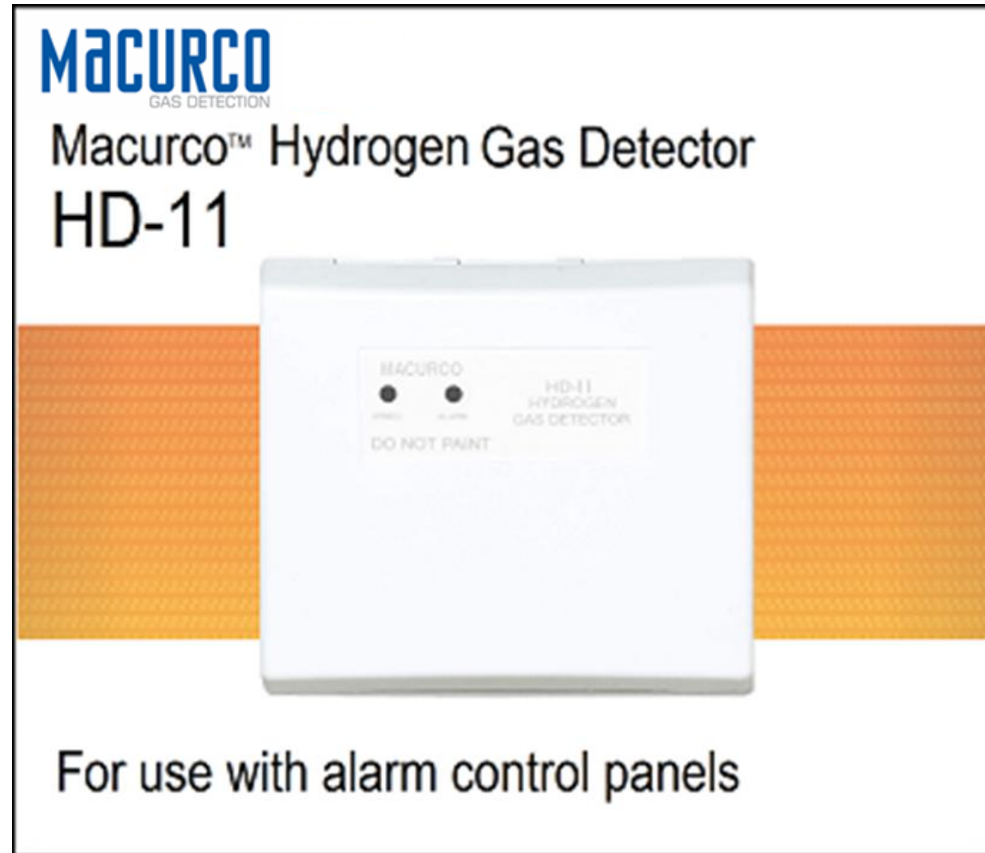
# Heating Gases: Propane and Methane

- Propane also known as Liquefied Petroleum (LP) gas is fuel for many homes, businesses, private and municipal vehicle fleets, school buses, taxis, forklifts and other indoor industrial vehicles
- Propane is stored as a liquid and converted into a gas inside a tank or a cylinder. In its natural form Propane (C<sub>3</sub>H<sub>8</sub>) is colorless and odorless with flammability limits in air of 2.2 to 9.5%
- The “rotten egg” smell of Propane gas is an odorant called “Mercaptan” added to aid in leak detection
- Propane gas is heavier than air and may accumulate in basements, crawl spaces, ditches or along floors

# Heating Gases: Propane and Methane

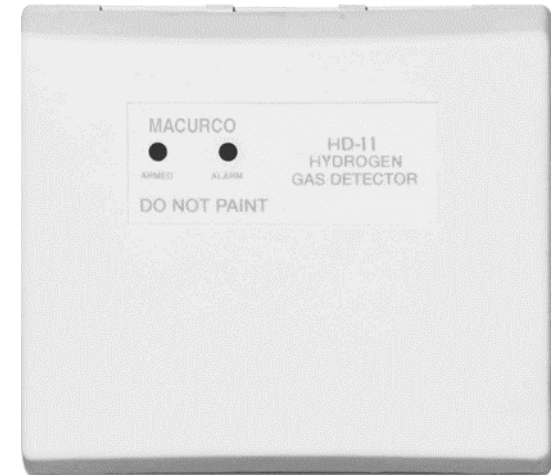
- Sources of Methane gas include Landfills; from the decomposition of wastes, livestock and manure management, Natural Gas utilities or Natural Gas powered vehicles and maintenance facilities
- Methane (CH<sub>4</sub>) is a colorless, odorless gas with flammability limits in air of 5.3% to 15%
- Utility Natural Gas is almost pure Methane mixed with ethane, propane, butane and pentane
- The “rotten egg” smell of Methane gas is an odorant called “Mercaptan” added to aid in leak detection
- Natural Gas and Methane are lighter than air and may accumulate high in a room or building

# HD-11 Hydrogen Gas Detector



# HD-11 and Hydrogen Gas

- Low voltage electronic detector of Hydrogen gas
- Designed for connection to Fire Alarm/Burglary Control Panels
- Intended for installation in buildings in non-hazardous locations where hydrogen gas may be present
- The three part plastic case allows the HD-11 to be either surface mounted or installed over a four-inch square or double gang electrical box, providing a near flush mount
- Can be gas tested by directing gas from an unlit butane cigarette lighter into the detector near the left side through the vent holes
- Alarm set point: 10% LEL hydrogen gas
- Can be self-restoring or latching





# HD-11 and Hydrogen

- Sources of Hydrogen include battery charging stations for golf carts, forklifts or automobiles, battery back-up in IT rooms or telecommunication towers and fuel cell or hydrogen powered vehicles and maintenance facilities
- Lead-Acid batteries generate Hydrogen (H<sub>2</sub>) gas during recharging
- At ordinary temperature and pressure Hydrogen it is an odorless, colorless gas
- Hydrogen burns readily in air over a wide range of concentrations: from 4 to 75% by volume
- Hydrogen gas is lighter than air and may accumulate high in a room or building

# HD-11 and Hydrogen

- Locate the unit high in the room where storage batteries are being charged, or where there may be other hydrogen sources. The Macurco Hydrogen Gas Detector HD-11 is NOT intended for use in industrial applications such as refineries, chemical plants, etc.
- The HD-11 can be affected by a broad range of combustible gases such as alcohol, ammonia, solvents, paint thinner, gasoline vapors and aerosol propellants
- Do NOT mount the HD-11 in a corner.
- Mount the HD-11 on a wall or column about one foot down from the ceiling
- Use the same spacing as for smoke detectors 30-foot centers, 900 square feet per detector



# Macurco Security Series Detector Accessories

- Duct Mount Kit DMK-1
  - Duct Mount Kit for monitoring gas concentrations in ventilation ducts
- Plug-in Power Supply PS-24
- CM-E1 Adaptor Kit
  - 2-Gang to Single-Gang Adaptor Plate Kit; CM-15/15A to CM-E1 Conversion or GD-2A to GD-2B Conversion
- CME1-PCA Wire Harness
  - Replacement 8-conductor pigtail cable for use with the CM-E1 Carbon Monoxide Detector





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