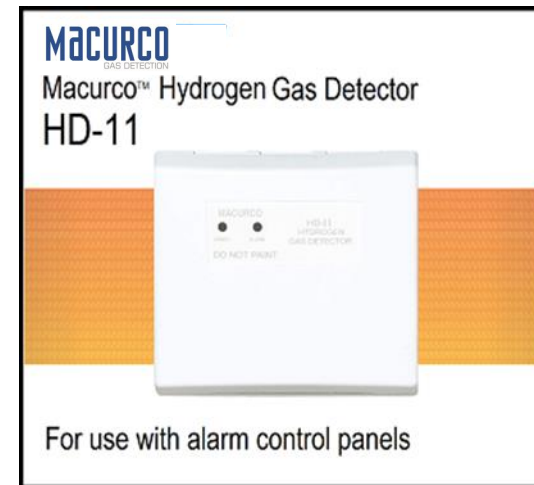
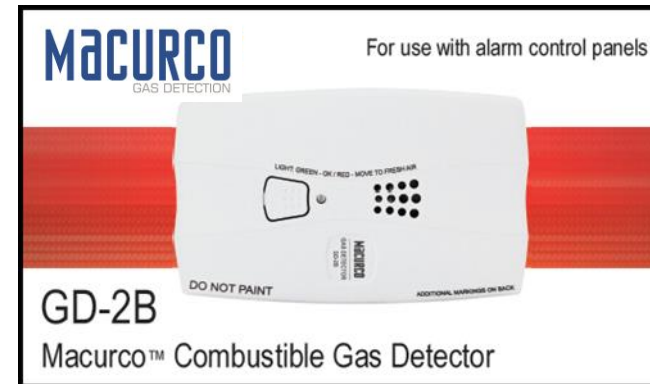


Macurco Security Series Training

Gas Detection. It's What We Do.

Macurco Security Series Detectors



Gas Detection. It's What We Do.

CM-E1 Carbon Monoxide Detector



Gas Detection. It's What We Do.

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

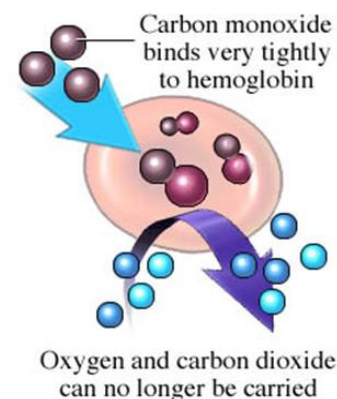
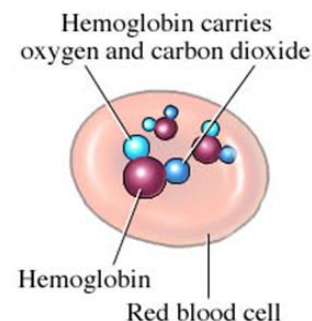


CM-E1 Carbon Monoxide and Hydrocarbon Fuels

- 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

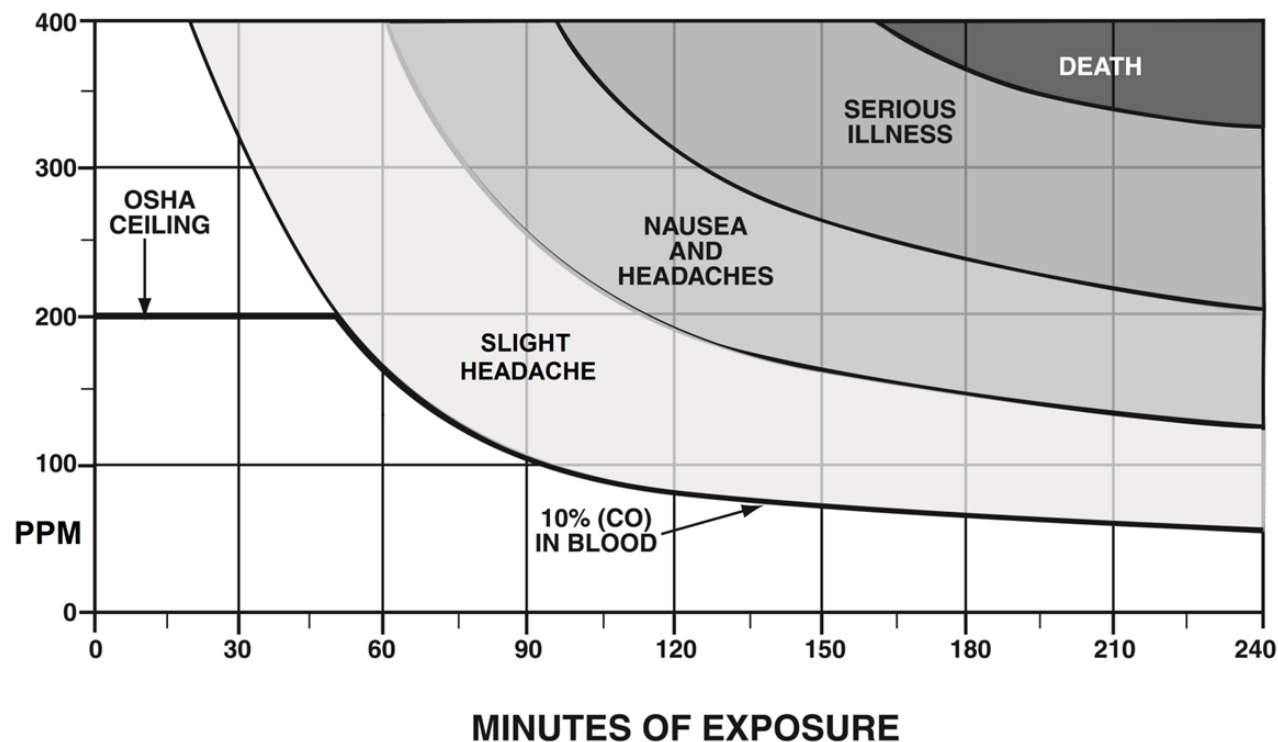
CO Level in Air	Health Effects
0 ppm	Fresh Air
100 ppm	Slight headache after 1-2 hours.
200 ppm	Dizziness, headache, nausea after 2-3 hours.
400 ppm	Dizziness, headache, nausea after 1-2 hours / life threatening after 3 hours.
800 ppm	Dizziness, headache, nausea after 45 minutes, unconscious after 1 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

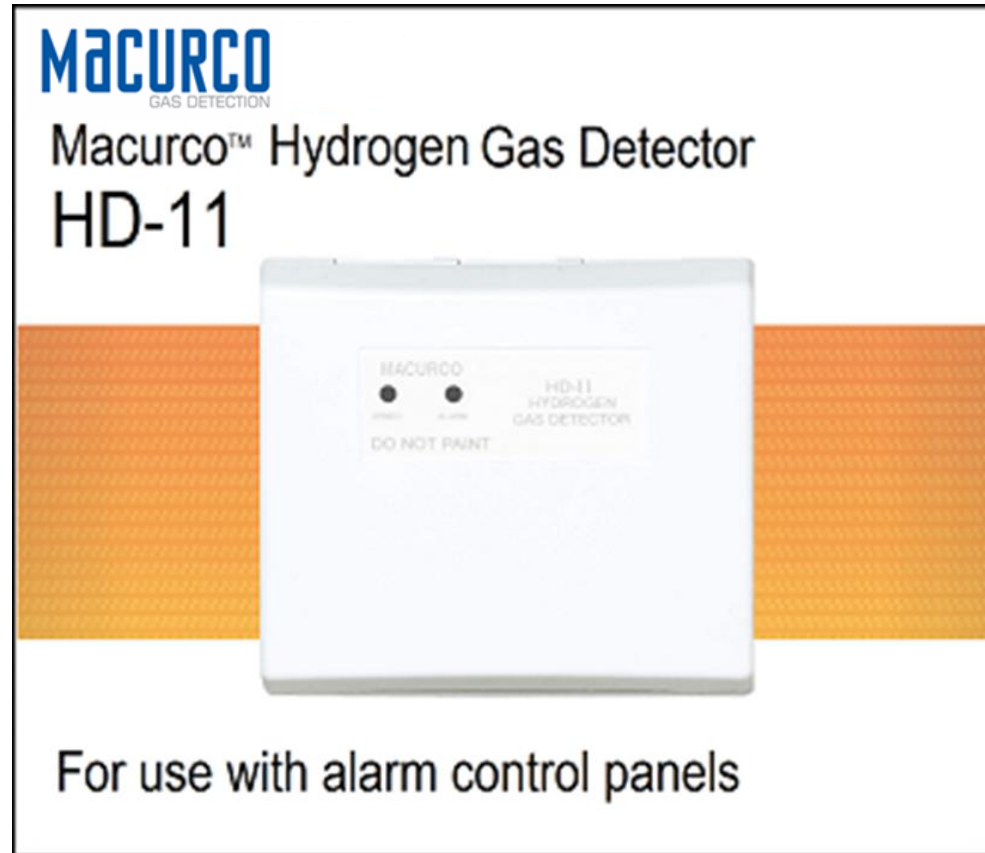
Heating Gases: Propane and Methane

- 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_3H_8) 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

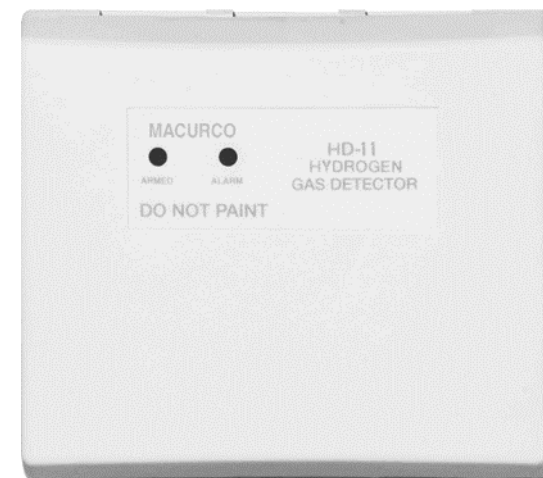
- Sources of Methane gas include Landfills; from the decomposition of wastes, livestock and manure management, Natural Gas utilities or Natural Gas powered vehicles and maintenance facilities
- Methane (CH₄) is a colorless, odorless gas with flammability limits in air of 5.3% to 15%
- Utility Natural 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 (H₂) 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

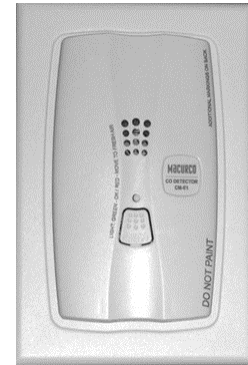
HD-11 and Hydrogen

- 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





Gas Detection. It's What We Do.